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PREVENTIVE MEDICINE

CHAIRMAN'S ADDRESS

R. H. RILEY, M.D., DR.P.H.
Director, Maryland State Department of Health
BALTIMORE

At the first meeting of the American Medical Association, held in Baltimore in 1848, a committee on public hygiene was appointed, with Dr. James Wynne of Baltimore as chairman. At the second meeting of the Association, held in Boston on May 1, 1849, the first report of the committee was submitted. At a later date a section quite comparable to the present Section on Preventive and Industrial Medicine and Public Health was organized. The Council on Health and Public Instruction was established in 1910 and was succeeded in 1922 by the present Bureau of Health and Public Instruction. Through the publications of the Association, through the work of this section and the Bureau of Health and Public Instruction, through its broadcasting programs and other official agencies, the Association has provided helpful information to the public and encouraged the practice of preventive medicine and cooperative effort on the part of physicians with respect to all sound and reasonable measures for public health betterment.

Any open antagonism or passive resistance by the general practitioner to the practice of preventive medicine was declared by the late Dr. William H. Welch "to be a challenge to the health officials."

In Maryland we have always enjoyed the most cordial cooperation with the state medical society, the Medical and Chirurgical Faculty of Maryland, the Baltimore City Medical Society and the several county medical societies. All plans for public health activities are discussed by members of the state board of health with the council of the Medical and Chirurgical Faculty, and the final program has the support of the faculty. Most of the county societies have a public health committee, which meets with the county health officers to formulate the health program of the county.

I feel that any program approaching the ideal in preventive medicine must have the whole hearted support of the general practitioner.

It is stated that the position of the general medical practitioner is being steadily undermined by the modern development of public health clinics, hospitals and specialties. I cannot say how far this is true, but I do say that any loss in the position or influence of the general practitioner is good neither for the profession nor for the public. In our system of public health the general practitioner should be the keystone and a most important factor in the whole program. The general practitioner, then, should be actively associated with the public health work of his community. The Maryland State Board of Health has always insisted that the physician should have a prominent part in the prevention and control of communicable diseases. Much progress has been made also in securing and holding the interest of a large part of the profession of this state in the maternity and child hygiene program.

Read before the Section on Preventive and Industrial Medicine and Public Health at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1935.

EFFORTS IN MARYLAND

As an example of what the family physician may do in the control of communicable diseases, I cite Carroll County, Md., in which a very large proportion of the preschool and school population was immunized against diphtheria by the physicians, leaving to the full time health officer a small group, which for some reason did not or could not get to the clinics held by the physicians. In the same county the health officer rarely is obliged to vaccinate children entering school as required by law. This is done entirely by physicians as a matter of course. Immunizations against diphtheria by physicians reached 1,237 in one small campaign recently conducted in that county.

In Washington County, Md., the medical society appointed a public health committee, which cooperates with the county health officer in all matters relating to preventive medicine, child hygiene, maternal hygiene, venereal diseases, tuberculosis, and medical care of relief cases. The medical society took a very active part in a county-wide diphtheria immunization program recently. The encouraging feature was participation by all the members not only in the immunization but in the Schick testing that followed. Physicians were assigned to each school to do the Schick tests. All children showing a positive Schick test were referred to their family physicians for immunization. During the campaign, 5,179 children showing a preliminary positive Schick were immunized. Of this number, 1,839 were immunized by family physicians in their offices and 3,340 by the physicians and health officer at the schools.

In Prince Georges County, Md., the health department in the last year conducted preliminary Schick tests in all schools in the county. A total of 4,989 children were tested and all those who gave a positive Schick test were referred to their family physicians. The number of immunizations done by the physician is not yet available; however, some have reported that they have done quite a large number.

April 8, 1935, the Wicomico County Medical Society, on the eastern shore of Maryland, adopted resolutions as follows on participation in the public health program of that county:

"That the medical profession will assume joint responsibility with the health department and each

physician to immunize the children in his community or practice regardless of ability to pay.

"That the health officer is to administer the program creating public opinion and response," by which is meant a program of publicity.

At this meeting the medical society further agreed to cooperate with the health officer through the public health committee of the society in all matters pertaining to the program, and to take an active part in the antepartum clinics held at the hospital and in the various communities, and to cooperate in a plan for the lowering of the present high infant death rate of that county.

Worcester County Medical Society about a year ago, on learning of the great prevalence of venereal diseases in the county, authorized the establishment of a clinic by the county health officer to which the members of the society would refer, for an examination and a Wassermann test, persons suspected of being infected. All persons receiving this service are to be reported back to the physicians sending them in. The physicians then will either treat these persons or will send them back to the clinic for treatment. Recently the same society, having learned of the high infant death rate that has obtained for years in the county, has asked the county health officer to provide antepartum clinics, which the neighborhood physicians will be privileged to attend.

In Montgomery County the county medical society and the health officer agreed on a plan for school examinations by the private practitioner. The physician will conduct the examinations, and the public health nurse will arrange the program, assist in the examinations and keep the records. No physician will examine the school children in his own district.

The Baltimore City Health Department is now in its fifth annual diphtheria prevention campaign, and the commissioner of health has said that the success of the diphtheria prevention campaign was due in a large measure to the active participation of the practicing physicians of Baltimore. The Baltimore City plan was to allow a period of four months to precede that portion of the campaign involving the city-wide publicity drive of May and June. During this preliminary period every effort was made by the health department to "skim off" into the offices of private physicians the cream of the diphtheria prevention practice. Figures are at hand for the campaign, which demonstrated, more than any earlier one, the growing interest and continuously increasing support of this public health project by the medical profession in Baltimore. The ratio of children under 5 years of age reported as inoculated against diphtheria in the offices of private physicians to those inoculated in clinics and dispensaries was 1 to 7 in 1933 as compared with 1 to 10 in 1932. The true ratio is probably more favorable to private medical practice, as reports from this source are as yet fragmentary. An effective and unusual permanent feature of the diphtheria prevention campaign was inaugurated Jan. 1, 1933, in the form of a six months personal greeting card from the commissioner of health, which since that date has gone daily in the mail to about thirty-five babies in Baltimore.

THE PROGRAM AGAINST COMMUNICABLE DISEASES

In the immunization program in a community the health officer might take as his objective the number of immunizations each year to approximate the birth rate of the preceding year.

"Today the battle for a clean environment and a minimum guaranty against destitution may be said to be won." There can be found many who are equally positive regarding the accomplishments in the struggle against diphtheria, typhoid and smallpox.

Maternal mortality and the infant death rate for our country have responded in an encouraging manner to the preventive program, but much remains to be done. It will require the united efforts of those officially and unofficially engaged to hold the gains that have been made. The magnitude of the maternal and child health program in the United States may be judged by the number of live births reported in 1933, which was 2,064,944, or a rate of 16.4 per thousand of population. This does not include 76,837 stillbirths reported.

In the preventive program against communicable diseases, some notion will be gained of its size when I state that there are 11,500,000 children in the United States under 5 years of age who should be protected by vaccination and inoculations against those diseases for which specific agents exist. This list is rapidly increasing as new discoveries are made. In the school population alone there are 24,600,000 for the health of whom the medical profession should assume its share of the responsibility.

The value of these preventive measures is clearly demonstrated by the following figures, obtained from Surgeon General Hugh S. Cumming of the United States Public Health Service:

The death rate per hundred thousand of population for diphtheria for a group of states in 1930 was 4.6 and in 1934 had declined to 2.7. The United States Bureau of Census reports showing the death rates in the registration area in continental United States for a number of years reveal the low rate of 0.4 in one state; in 1933 several states had rates of less than 1. Diphtheria morbidity and mortality rates seem to offer a fairly sound test of the quality of medical service received by the community. The conquest of diphtheria is now in process. The methods of achieving victory are known. The date of complete triumph depends on the methods and intensity by which they are applied.

The rates for typhoid indicate that the efforts of the past and the constant vigilance of the present have had a most favorable effect on the downward trend of this disease. Typhoid has been brought under control and shows a continued decline. The death rate per hundred thousand of population for a group of states in 1930 was 3.7 and has shown a yearly decline. In 1934 it reached 2.3 and in a number of states it was even lower. If less diligence should be shown in the supervision of public water and milk supplies, inspections of general food supplies and control of the sporadic cases, the typhoid rate would show a marked increase.

Tuberculosis has responded remarkably well to the program for its control. Intensive studies of its epidemiology and more comprehensive methods for its control are now being conducted in many localities. The death rate per hundred thousand of population from all forms of tuberculosis was 68 in 1930 and has shown a decline reaching 54.3 in 1934. I may with some degree of pardonable pride call attention to the fact that it was in Maryland that the first concerted campaign for the control of tuberculosis had its origin. In 1899 Osler formed the Laënnec Society for the Study of Tuberculosis. Maryland had the first tuberculosis exhibit in this country and was the first state to register tuberculosis. It was in Baltimore that the first steps were taken preliminary to the organization of the National Tuberculosis Association.

DISEASES OF MIDDLE LIFE

The mortality of diseases of middle life remains high. The death rate per hundred thousand of population from cancer was 97.8 in 1930 and has continued to increase until in 1934 it was 107.9. Diabetes likewise shows an increase, being 19.3 in 1930 and 22.9 in 1934. Diseases of the heart have shown a steady increase in death rates since 1930. The rate in 1930 was 210, and in 1934 it was 243.9.

Some time ago the American Medical Association prepared a manual for the conduct of periodic examinations. For some reason this movement has not spread as rapidly as its sponsors predicted. It is generally agreed that the heavy toll taken in middle life could be lessened if the plan of periodic examination and regular supervision by the family physician were generally adopted. In this way, many diseases would be detected in their incipience, and habits of living might be modified so that health might be conserved and lives prolonged for many years of usefulness and enjoyment.

MATERNAL AND INFANT MORTALITY

The maternal mortality rates show a slight decrease during the five year period 1930-1934. The rate in 1930 and 1931 was 6.2 and has shown a decrease each year, reaching 5.4 in 1934. Maternal mortality from puerperal sepsis has not fallen, despite the advances that have been made in the practice of medicine in general. A pronounced improvement in the prevention of puerperal sepsis can be accomplished if there is a close cooperation between public health authorities, the obstetrician and the general practitioner.

The total infant mortality given as deaths under 1 year per thousand live births was 62 in 1930 and shows a slight decrease, reaching 56 in 1933, to increase in 1934 to 58. The infant mortality, except malformation and diseases of early infancy, was 29 in 1930 and has fallen steadily each year to 25 in 1934.

INDUSTRIAL HYGIENE

Another important public health problem in which there is being manifested great interest at this time is industrial hygiene. Some health departments maintain separate bureaus or divisions of industrial hygiene, and this branch of activity is assuming a more important rôle. This subject will be fully presented before the section. In dealing with industrial hygiene special methods are required. Nuisances can be extinguished or slums demolished as menaces to the health of the public, but these root and branch methods cannot be applied to the factory. It is not practicable to shut down an important process the moment it causes a hazard to the workers. One must, on the contrary, recognize the need to keep the wheels of industry turning and must take up the more difficult task of devising protection for the worker without arresting the work.

ADEQUATE ORGANIZATION

Under existing conditions of economic pressure the problems of public health become aggravated and the need of an efficient, well coordinated, clearly defined organization becomes correspondingly urgent.

A comparatively small percentage of the rural areas of the United States has the form of health organization that is generally recognized as adequate. At the close of 1933, 73 per cent of the rural population was without this form of organization. During that year fifty-five full time units were discontinued and only four established. Some of the losses of 1933 were regained in 1934. I am glad to report that Maryland increased to 100 per cent the health service to the rural population during the latter year.

In closing, I wish to emphasize the necessity for whole hearted participation of the entire medical profession in the public health program if our people are to receive the benefits of existing knowledge for the prevention of unnecessary sickness and death.

2411 North Charles Street.

CERTAIN MENSTRUAL DISTURBANCES

ASSOCIATED WITH LOW BASAL METABOLIC RATES WITHOUT MYXEDEMA

SAMUEL F. HAINES, M.D.
AND
ROBERT D. MUSSEY, M.D.
ROCHESTER, MINN.

In 1933 we[1] reported the results of treatment, by the oral administration of desiccated thyroid glands, of twenty-seven patients who had amenorrhea or marked oligomenorrhea and low basal metabolic rates without evidence of myxedema. We found that, of twenty-two patients who had had periods of amenorrhea, 59 per cent menstruated more normally after treatment than they had before. At this time we report the results of similar treatment of seventy-four patients who had amenorrhea, oligomenorrhea or menorrhagia and low basal metabolic rates. These patients were seen in the years 1929 to 1934 inclusive. The cases that were reported in the original paper are included in this study.

Since 1917 H. S. Plummer[2] has recognized a group of patients who had low basal metabolic rates without clinical evidences of myxedema. Litzenberg and Carey[3] noted that menstrual disturbances which could not be accounted for by any pathologic condition in the pelvis were found with moderate frequency in such cases. Many of these patients also complain of fatigue states. There is at present no reason for assuming a pathologic basis for the low basal metabolic rate in these cases; signs of myxedema do not develop, however low the level of metabolism may be. The response of the basal metabolic rate to the oral administration of desiccated thyroid is not so consistent in these cases as it is in cases in which myxedema is present. Furthermore, the elevation of the basal metabolic rate is not followed by improvement as frequently in these cases as it is in cases in which myxedema is present. The presence of low basal metabolic rates among several members of a family and the finding of a low basal metabolic rate among great numbers of individuals who apparently are in normal health also argue against a pathologic basis for the condition.

Elevation of the basal metabolic rate in the group of cases under consideration was carried out by the daily oral administration of desiccated thyroid. During the first few weeks of treatment the patients were kept under close supervision, and frequent observations of the basal metabolic rate were made. When a provisional

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daily dose of desiccated thyroid had been decided on, some patients were allowed to return home for a few weeks or a few months, but in all cases subsequent observations and determinations of the basal metabolic rate were made. There is sufficient individual variation in the daily dose of desiccated thyroid to make it necessary to hold the basal metabolic rate at the optimal level for the individual patient. Therefore, patients were not treated unless they could be kept under observation long enough to work out the necessary dosage. Patients are seen from time to time in the course of improperly controlled administration of desiccated thyroid who show definite evidences of hyperthyroidism because of excessive doses; others are seen whose metabolism remains low because of inadequate dosage. We feel strongly that these unnecessary complications of this treatment should be avoided. This can be done only by careful observation and occasional determination of the basal metabolic rate for a few months, at least. In the group of cases under consideration the doses of desiccated thyroid varied from one-half to 3 grains (0.03 to 0.2 Gm.) daily. The original level of the basal metabolic rate was not necessarily a factor in determining the daily dose needed in any individual case. Because most patients feel best if the basal metabolic rate is held at about —3 to —8 per cent, this level was aimed at in the treatment. This metabolic level seemed as effective as higher levels in the treatment of menstrual disturbances and was much less likely to result in uncomfortable symptoms, such as palpitation, diminished heat tolerance, and weakness.

Because of the time necessary to establish properly the dosage of desiccated thyroid, many patients found it impossible to remain under our care long enough to follow this method of treatment. We have not included in this report patients who received treatment elsewhere. Also, in many instances, the administration of other hormone preparations, the application of roentgen rays over the pituitary body and ovaries, or other treatments were used independently or in association with thyroid medication; cases in which these treatments have been employed have not been included in this report. No case in which the patient showed evidence of myxedema has been included in this report.

The specific factors that are included in this study can best be considered if the cases in which the patients had amenorrhea, oligomenorrhea or menorrhagia are divided into separate groups. The relationship of low basal metabolism to sterility and to repeated miscarriages is not considered in this report.

AMENORRHEA

Fifty patients who had had amenorrhea for varying periods were treated with desiccated thyroid. The average age of these patients was 26.9 years; the greatest number of patients (twenty-five) in any decade were between 21 and 30 years of age. Twenty-seven of the patients were married. After elevation of the basal metabolic rate, fourteen patients (28 per cent) reported no improvement in the menstrual disturbance, seven (14 per cent) reported slight to moderate improvement, and twenty-nine (58 per cent) reported that their menstrual periods were normal or nearly so. The average duration of amenorrhea in those cases in which the menstrual disturbances were improved was nine and one-half months. In eight of these cases the patients had had amenorrhea for one year or more, and of these one had not menstruated for two years, one for four years, and one for five years. The average duration of amenorrhea, in the cases in which the patients reported that there was not any change in menstruation after treatment, was nine and two-tenths months. One of these had not menstruated for two and a half years, and another had not menstruated for four years. Thirty-seven (74 per cent) of the patients in this group said that they were in better general health after the elevation of the basal metabolic rate than they had been before. Some patients who reported general improvement had not noted any improvement in the menstrual disturbance, and vice versa. The average basal metabolic rate in cases in which amenorrhea was relieved by the treatment was —18.1 per cent; that in the cases in which the amenorrhea was not improved by the treatment was —18.5 per cent. In each of these groups of cases the basal metabolic rates varied between —11 and —30 per cent.

OLIGOMENORRHEA

Nine patients who had varying degrees of oligomenorrhea were treated by elevating their basal metabolic rates. The average age of these patients was 30.6 years; six of them were married. Four patients (44.4 per cent) did not note any improvement in menstruation after the treatment; two patients (22.2 per cent) said that the menstrual periods were more normal than they had been; and three (33⅓ per cent) said that their menstrual periods were normal or nearly so after the administration of thyroid. Six patients (66⅔ per cent) noticed improvement in their general health after elevation of the basal metabolic rate. The average basal metabolic rate before treatment in those cases in which there was improvement in the menstrual disturbance was —19.8 per cent, and in those in which no improvement was noted it was —16.8 per cent.

MENORRHAGIA

Fifteen patients who were suffering from menorrhagia were treated with desiccated thyroid. The average age of these patients was 30 years; twelve were married. Four patients (26.6 per cent) did not note any change in the menstrual disturbance after elevation of the basal metabolic rate. In three cases (20 per cent) there was slight to moderate improvement of the menorrhagia, and in eight cases (53.3 per cent) the menstrual periods became normal or nearly so. Eighty per cent of the patients in this group noticed an improvement in general health after elevation of the basal metabolic rate. The average basal metabolic rate was —17.3 per cent in those cases in which there was improvement in the menstrual disturbance, and —22 per cent in cases in which the patients did not note any improvement in the menorrhagia. In another group of cases of menorrhagia, which is much larger than the present group, the patients were treated with curettage, with anterior pituitary or with other hormones, or with both curettage and such hormones, with or without desiccated thyroid. These cases are not included in this report.

COMMENT

The number of patients in either of these groups who would have noted improvement in the menstrual disturbances had they not had any treatments during the time they were under observation is, of course, unknown. Since the menstrual disturbances were of long standing in many cases, it seems evident that maintenance of the basal metabolic rate at or near the average normal level was a factor in the reestablishment of normal menses in at least a fair percentage of the cases. Fatigue states have been encountered frequently in these cases, as they have in many cases in which

there are low basal metabolic rates without evidence of myxedema. A high percentage of patients in each group noticed a diminution in fatigue after the basal metabolic rate had been raised. This experience has been widely noted in the entire group of cases in which there were low basal metabolic rates.

This method of treatment becomes of increasing interest in view of the opinion expressed in the past year by Frank, Goldberger and Spielman [4] that the use of estrogenic substances appears entirely illusory, and because of the statement by Novak [5] that anterior pituitary therapy is still largely a blank. We have not made any attempt to use the thyrotropic hormone of the anterior pituitary body in these cases, chiefly because of reports by Anderson and Collip [6] and others of its temporary effect, and also because of the ease and accuracy with which elevation of the basal metabolic rate can be accomplished by the administration of desiccated thyroid. The work of Fluhmann [7] indicates that thyroid substance inhibits the effect on the ovaries of the gonad stimulating hormone of the anterior pituitary body, and that this inhibition is the result of the direct effect on the ovary and not the result of indirect action through the anterior pituitary body. Although his observations seem to demonstrate that the thyroid gland has at least an indirect effect on ovarian activity, we are not prepared to say that this explains the results obtained following the administration of desiccated thyroid to patients who have menstrual disturbances associated with low basal metabolism.

SUMMARY

A group of patients who had amenorrhea, oligomenorrhea or menorrhagia and low basal metabolic rates were treated with carefully regulated oral doses of desiccated thyroid glands. Because of a desire to determine the effectiveness of desiccated thyroid alone in the treatment of these conditions, no patients who received any other form of treatment are included in this report. Definite improvement in the menstrual flow was obtained in 72 per cent of the cases in which there was amenorrhea, in 55 per cent of the cases in which there was oligomenorrhea, and in 73 per cent of the cases in which there was menorrhagia. Aside from whether or not there was an improvement in the menstrual disturbance, about 75 per cent of the entire group of patients reported improvement in their general health after elevation of the basal metabolism to within the average normal limits.

ABSTRACT OF DISCUSSION

DR. J. C. LITZENBERG, Minneapolis: The authors have brought out that there is a very definite relationship between the thyroid and the reproductive system and that there is a definite relationship between sterility and habitual abortions and the thyroid. The fixed idea that minus 10 to plus 10 is the normal basal metabolic rate leads to difficulty. That is true as to disease from the standpoint of the internist and the physician, but from a physiologic standpoint no one knows just what it is, because within these rates a great many cases have been treated with thyroid with favorable results in these functional disturbances. I wish to emphasize that in each individual the dosage must be established by the basal metabolic rate. One-fourth grain (0.016 Gm.) of thyroid produced hyperthyroidism in a patient and, on the other hand, 5 grains (0.3 Gm.) a day failed to raise the rate, illustrating that each individual must be tested as to what her dosage should be. The results that I have observed are quite similar to those of the authors. One fourth of the patients with functional dysmenorrhea were improved when they had amenorrhea or oligomenorrhea and 60 per cent were definitely normal after the medication. The health of 80 per cent was definitely improved. Of course, speaking in percentages of small groups of cases probably does not express the exact condition of things. In 1926 I found that in sixty-nine cases of sterility the rate of the basal metabolism was low in 50 per cent and that with functional disturbances of menstruation, such as the authors have been discussing, 40 per cent of the patients were sterile. Out of 114 women, 40 per cent had functional disturbances. In 1929 our cases from the Nicollet Clinic were accumulated by my colleagues Carey and Blumstein. The number of cases by this time had been somewhat increased and the percentages have a little more value. There were 255 married women with low basal metabolic rates. Of these, 49.7 per cent were sterile, which agrees with our percentages of the smaller group. Of 469 with low basal metabolic rates 39.7 per cent had such disturbances and 63 per cent were improved. In all the different types of functional menstrual disturbances of approximately 500 women the improvement was 68.2 per cent.

DR. T. J. WILLIAMS, University, Va.: Many women with functional disorders of menstruation show essentially normal metabolic rates, although even in this group some improvement in the menstrual irregularity may follow thyroid medication. Excessive menstruation seems more likely to be associated with mild hypothyroid states than is scanty or absent menstruation, although in either instance irregularity of rhythm is common. The widespread use of some of the more recent glandular preparations without a complete examination and study of the patient has occasionally permitted lowered thyroid activity to be overlooked as a possible associated cause in menstrual disorders. I recall a young woman who at the age of 19 developed a functional amenorrhea and who for two years was treated with various glandular products. At this time, the basal rate was minus 22 and amenorrhea persisted. Under thyroid medication the rate was raised to minus 11, at which level menstruation recurred. On several attempts to discontinue the thyroid, amenorrhea recurred and the basal rate dropped as low as minus 40 on one occasion. In December 1933, after two years of thyroid therapy, it was finally discontinued and the periods remained regular in all respects until September 1934, when a pregnancy occurred, which has proceeded normally. In my hands the best results in the treatment of the functional menstrual disorders have been in individuals with lowered basal metabolism treated with thyroid. Definite improvement in from 55 to 73 per cent of the cases suggests that this method of therapy is simpler and more satisfactory than any of the other methods available at the present time. An important consideration in these individuals, aside from the correction of the menstrual disturbance, is the improvement in the general health and well being and the relief of fatigability and lassitude that are associated with the elevation of the basal rates. It is questionable whether the employment of the thyrotropic hormone of the anterior pituitary body, even if readily available, would have any great advantage over desiccated thyroid in the treatment of these patients. Patients treated with thyroid preparations should be under close observation, and, in deciding on thyroid therapy and in determining dosages, the physical signs of thyroid activity should be considered as well as basal metabolism determinations.

DR. R. D. MUSSEY, Rochester, Minn.: Dr. Litzenberg has called attention to the fact that percentages of small groups of cases sometimes are not absolutely accurate; I agree with this, yet I feel that these figures show the trend of results of treatment. This group is small because we have reported only cases in which we have exercised personal supervision during the course of the treatment. In addition to the low basal metabolic rate, it was realized that some of these patients may have had disturbances in the production of estrogenic or gonadotropic substances, and in some of these cases determinations of estro-

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genic or gonadotropic substances or both were made. These determinations have not been carried on long enough to evaluate the possible association of any appreciable number of cases in which the basal metabolic rates were low and in which estrogenic and gonadotropic determinations may have also shown a variance. As a rule, thyroid treatment has to be continued for an indefinite period. We have noted that, when patients improve on thyroid medication, the discontinuance of this treatment is commonly followed by lowering of the metabolic rate and a relapse to their former condition.

CONGENITAL SYPHILIS

DIAGNOSIS BY MEANS OF DARK-FIELD EXAMINATION OF SCRAPINGS FROM THE UMBILICAL VEIN

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PHILADELPHIA

When one is dealing with an infectious disease, demonstration of the causative agent is always desirable in order to establish the diagnosis. The necessity for demonstrating the organism varies inversely with the vividness of the clinical picture presented by the patient. A new-born syphilitic child is usually free of symptoms during the first few days or weeks of life.[1] Hence, the demonstration of Spirochaeta pallida, were this possible, would be a valuable diagnostic aid.

Obtaining material in which to demonstrate spirochetes from a living child suspected of having syphilis presents a problem which is often insurmountable. It is true that spirochetes have been shown to be present in the blood stream,[2] the nasal secretion,[3] the conjunctival secretion,[4] syphilitic cutaneous lesions, the urine [2c] and in the meconium [5] of syphilitic infants, but in most instances the infant in whom the causative micro-organism is found has manifest clinical evidence of congenital syphilis or has succumbed to the disease before birth or shortly afterward. Spirochetes have been revealed in certain instances in all the products of conception: in the placenta, the umbilical cord, the amniotic fluid and the various fetal membranes; but so far as diagnosing syphilis in the new-born child is concerned the demonstration of histologic changes or of spirochetes in the placenta or in the fetal membranes, however valuable it may be for demonstrating the presence of syphilis in the mother, will never indicate with certainty whether or not the child is diseased (McCord,[6] McKelvey and Turner,[7] Trinchese [8]). There remains for purposes of diagnosis the umbilical cord.

This structure is unique in that, while it forms an important part of the fetal circulation, it is readily accessible for laboratory study after birth and it is the avenue through which the spirochetes must pass from the mother to the child, if the latter is to become infected. Several modes of transfer of the spirochetes from the maternal to the fetal circulation have been suggested,[9] but the theory of permeation of the lymphatic system mentioned by Rietschel [10] is the one that is of most concern in this study and the one that will accordingly be described. In brief, a transient spirochetemia in the mother infects the maternal portion of the placenta. An inflammatory reaction in the smaller blood vessels results in a swelling of the media, in an obliterative endarteritis and in the formation of a small infarct. Spirochetes multiply rapidly in this area, permeate the tissue membrane separating the maternal and fetal circulation and gain access to the tissue spaces in the fetal portion of the placenta. The fluids from these areas drain into the lymphatic vessels which course, in part at least, in the perivascular tissue surrounding the umbilical vein and apparently in the wall of the vessel itself. Thus the spirochetes gain ready access to the fetal organism through these channels.

Spirochetes have been described as present in the umbilical cord by a number of European workers.[11] As early as 1906 Huebschmann [12] and Simmonds [13] found spirochetes in sections of umbilical cord stained according to the Levaditi silver impregnation method. Other investigators confirmed their work.[14] These pathologists, however, were interested primarily not in the diagnosis of the disease in the infant but in showing the manner in which the fetus is infected. Thomsen and Boas [15] in 1909 did remark, none the less, that the demonstration of spirochetes in the umbilical cord was a difficult procedure and of little practical value from a diagnostic standpoint. Emmons,[16] pub-

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lishing a year later in this country, came to a similar conclusion, having found spirochetes in silver stained sections of the umbilical vein in only one of fifteen syphilitic infants. More recently, Manouélian,[17] in attempting to show the primary lesion of congenital syphilis, demonstrated the presence of many spirochetes in cases of periphlebitis of the umbilical vein. As a result of the combined investigations of the aforementioned workers, it has been learned that spirochetes may be found in the wall of the umbilical vein, in the wall of the umbilical arteries, more rarely in the blood within the lumen of these vessels, and in the jelly of Wharton, but it is agreed that the microoganisms are most numerous and most easily demonstrated in the wall of the umbilical vein.

Of more practical value, however, than the demonstration of spirochetes by histologic examination of silver impregnated microscopic sections, a procedure that requires a number of hours of work and an intimate knowledge of a rather specialized technic, is the demonstration of spirochetes by dark-field examination of fresh preparations made from scrapings from the wall of the umbilical vein. Gräfenberg[14] mentioned having used this method as early as 1908, but it was rediscovered by Vulovič[18] in 1923 and since has been employed with more or less success by other investigators, especially Klaften[19] and Philipp and Gornick.[20] They have considered the method of absolute diagnostic value in a limited number of cases. More than a year ago, McKelvey and Turner,[7] reporting from Johns Hopkins University on syphilis in pregnant women, stated that they had attempted this diagnostic procedure but had found it too cumbersome for routine work. In view of the fact that the cord must be examined shortly after delivery, the method necessitates, in hospital practice, close cooperation between the medical and nursing staff and a full-time resident physician skilled in the use of the dark-field method.

One of the more important contributions in this field of study was that of Vulovič, in Vienna, who examined 1,024 specimens of umbilical cords in unselected maternity cases and found spirochetes in seven. Two of the seven patients inadequately followed were never proved to have syphilis. Vulovič subdivided the cases in which the dark-field examination gave negative results into the following groups: 703 apparently normal infants, 280 cases of supposedly nonsyphilitic abortion and stillbirth, seventeen apparently healthy infants of syphilitic mothers, fifteen macerated fetuses and two infants of mothers infected during pregnancy. Each of the mothers in the seven cases in which the dark-field examination was positive was proved to have syphilis.

Klaften in 1925, without stating the number of specimens that had been actually examined, reported twelve instances in which spirochetes were found in scrapings from the umbilical vein. In all of these, with the exception of the case of one infant who was free of symptoms at the age of 11 months, syphilis developed. Klaften also found spirochetes in the cord of three of thirty macerated fetuses. Philipp and Gornick in 1926 reported positive results of dark-field examinations of material from the umbilical vein in nine living offspring and in fifteen still-born children of syphilitic mothers, all the living children being followed and the diagnosis of syphilis being made clinically. In the last nine years the method has been mentioned occasionally, but there are no reports of its having been used in any extended series of cases.

METHOD OF DARK-FIELD EXAMINATION

The method, as described by Vulovič and as employed in the present investigation with slight modifications, is briefly as follows:

Immediately after delivery a portion of the umbilical cord, about 3 inches (7.6 cm.) long, is cut from the distal end (the end farther from the placenta and nearer the child). This is placed in a sterile moist bottle and kept without preservative at room temperature. For best results the examination must be made as soon as possible after the infant is born, for, if the specimen stands for much longer than eight hours before it is studied, bacterial contamination begins to become evident and the possibility of obtaining a positive result is greatly diminished. When the examination is performed, the ends of the specimen are cut off and discarded, the middle inch (2.5 cm.) being saved. The two arteries and the single vein are then identified in cross-section without too great difficulty. The vein is best transfixed by passing through it from end to end some small blunt instrument, e. g., a probe (toothpicks have been used for this purpose), and the lumen of the vein exposed longitudinally by cutting down on the probe with a sharp scalpel. The blood adhering to the intima of the vessel, which somewhat hinders the study by making the spirochetes more difficult to find, is scraped away with a knife. The knife is then wiped clean and additional scrapings are taken from the wall of the vessel, placed in a drop or two of physiologic solution of sodium chloride, macerated, placed on a slide and examined in the dark-field microscope.

TABLE 1.—*Results of Dark-Field Examination of Material from Umbilical Vein of Eight Syphilitic Stillborn Infants*

		Status of the Mother			At Time of Delivery		
					Wassermann Reaction		
Case	Para	Type of Syphilis	Duration of Disease	Amount of Antepartum Treatment, Weeks	Maternal	Cord	Dark-Field Examination of Umbilical Vein
1	1	Congenital	14 years	0	4+	1+	+
2	1	Secondary	4 months	0	4+	4+	+
3	5	Latent	5 years	4	3+	3+	+
4	1	Latent	2 years	0	4+	4+	+
5	2	Latent	5 years	1	4+	4+	+
6	1	Latent	1 year	0	4+	4+	+
7	2	Latent	Unknown	2	4+	4+	—
8	2	Secondary	3 months	3	4+	4+	—

Spirochetes are never numerous. I have found one preparation, from a stillborn fetus, in which there were approximately twelve micro-organisms per field, but usually many fields were examined before a single spirochete was found. A specimen was called positive when at least two actively motile micro-organisms, morphologically Spirochaeta pallida, were revealed; it was called negative after examination of at least two preparations, for not less than one-half hour, did not demonstrate the presence of spirochetes.

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RESULTS OF STUDY

Dark-field examination was made of fresh preparations of scrapings from the umbilical vein in ninety-five unselected deliveries of syphilitic mothers at the Philadelphia General Hospital between May 31, 1934, and April 1, 1935. Spirochetes were found in twenty-five instances: six times in stillborn fetuses, nineteen times in living infants. None of the living children showed clinical symptoms at the time of delivery, and no treatment was given, but all the infants were followed sufficiently long to establish the diagnosis by some other means, clinically, serologically, roentgenographically.

From the practical standpoint it makes little difference whether or not spirochetes are demonstrated in the umbilical cord of a stillborn infant, since in those cases the damage has already been done to the child and the diagnosis of the disease is readily accomplished in the mother by means of blood tests. These cases are accordingly considered separately in table 1. The serology of the cord, which in this hospital is tested by means of the Wassermann reaction in two antigens and checked against the Kahn reaction, was invariably positive; the mothers had received little or no antepartum treatment, and spirochetes could be demonstrated in the scrapings from the umbilical vein in 75 per cent of cases.

It is with the living infants that the present study is principally concerned, for it is in such cases that treatment early and judiciously applied will decrease the infant morbidity and mortality resulting from congenital syphilis. The data concerning the nineteen living children in whom the specific micro-organism of syphilis was demonstrated in the scrapings from the umbilical vein are summarized in table 2.

TABLE 2.—*Nineteen Living Infants in Whom Spirochetes Were Demonstrated in Dark-Field Examination of Scrapings from the Umbilical Vein*

	Status of Mother			Wassermann Reaction		Status of Child		
						Roentgen Examination at 6 Days	Dark-Field Examination of Umbilical Vein	
Infant Number	Para	Type of Syphilis	Duration of Disease	Maternal at Time of Delivery	Cord			Syphilis Demonstrated
1	1	Latent	Unknown	4+	—	+	+	Yes
2	5	Latent	2 years	4+	—	—	+	Yes
3	8	Latent	8 years	—	—	0	+	Yes
4	3	Latent	2 years	3+	—	—	+	Yes
5	3	Latent	2 years	4+	—	+	+	Yes?
6	3	Aortic disease	5 years	3+	—	—	+	Yes
7	2	Latent	2 years	3+	—	—	+	Yes
8	1	Latent	Unknown	3+	—	+	+	Yes
9	5	Latent	Unknown	3+	—	+	+	Yes
10	4	Latent	2 years	4+	—	—	+	No?
11	2	Latent	Unknown	4+	—	—	+	Yes
12	2	Latent	Unknown	4+	4+	—	+	Yes
13	1	Latent	Unknown	4+	2+	—	+	Yes
14	3	Latent	3 years	3+	—	—	+	Yes
15	2	Latent	Unknown	3+	—	—	+	Yes
16	1	Latent	2 years	4+	—	+	+	Yes
17	3	Paresis	Unknown	4+	4+	+	+	Yes
18	4	Latent	Unknown	4+	—	—	+	Yes
19	5	Latent	12 years	—	—	—	+	Yes
Total positive results				17	3	6	19	17+2?
Total number of examinations				19	19	18	(35)	19
Percentage of positive results				89	16	33	(54)	100?

The unreliability of the Wassermann reaction as an absolute diagnostic criterion in early infancy is well established and generally recognized.[21] The Wassermann reaction of serum from the cord was positive in only three (16 per cent) of the nineteen living syphilitic infants who showed positive evidence under dark-field examination. The information obtained from the roentgenograms of the long bones, a much more valuable diagnostic aid for detecting congenital syphilis at the time of birth or shortly afterward, was compared with that from the umbilical vein in sixty-two instances (table 3). In nine instances the roentgenograms showed definite positive evidence, whereas the examination of the umbilical vein showed negative results. Spirochetes were found in the umbilical cord, on the other hand, in twelve cases in which the child had not been infected long enough for the changes to become evident in the bones, and in which the diagnosis could not have been made in the first week of life by any other method. Eighteen (25.7 per cent) of the infants in whom the dark-field examination was negative were subsequently proved to have syphilis.

TABLE 3.—*Comparison of the Results Obtained in the Offspring of Ninety-Five Mothers with Latent or Partially Treated Syphilis*

	Dark-Field Examination of Umbilical Vein			
	25 Positive Reactions		70 Negative Reactions	
	Number	Percentage	Number	Percentage
Infants born alive	19	76	68	97
Infants born dead	6	24	2	3
Positive roentgen evidence on sixth day	6 (18 cases)	33	9 (44 cases)	21
Positive Wassermann reaction of the cord	9	36	8	11
Positive maternal Wassermann reaction	22	88	46	66
Syphilitic infants	25?	100?	18	26
Average number of weeks of antepartum treatment	3		9	

In case 10 (table 2) positive evidence of syphilis was obtained from an examination of the umbilical vein, but the infant has not been proved to have syphilis clinically by studies thus far made. This infant is the fourth child of a white woman with latent syphilis and with strongly positive blood serologic test, who received only two injections of neoarsphenamine prior to delivery and whose last child showed clinical evidence of syphilis with strongly positive serologic proof at the age of 7 months. At the age of 4 months the child had a generalized lymphadenopathic condition but was otherwise healthy. A blood test was negative and roentgenograms of the long bones at six days and at four months were negative. It is still possible that in the youngest child clinical symptoms of syphilis may develop. One infant, case 5, followed for nine months, has not shown a positive blood reaction, even though he has not received any treatment. He is the third child of a woman with latent syphilis and a strongly positive blood reaction, who received only one treatment prior to delivery and whose last antecedent pregnancy resulted in a late miscarriage. Roentgenograms of the long bones of the child at the age of 6 days and of 2 months showed typical osteochondritic changes. The infant, who at birth weighed 6 pounds 3½ ounces (2,820 Gm.) and weighed only 11 pounds (5 Kg.) at the age of 9 months, appeared pale and sick, with obvious obstruction to nasal breathing and an enlarged and palpable liver and spleen. A clinical diagnosis of syphilis was made by the pediatricians.

Although there is no reason to think that spirochetes or artefacts resembling them would be present in the

21. Jeans and Cooke.[1] Ingraham and Kahler.[9]

circulation or tissue of nonsyphilitic infants, careful dark-field examinations have been performed on preparations from the umbilical vein in fifty cases in which the infant was not suspected of having syphilis. These have proved to be negative in every instance to microscopic test and to subsequent clinical investigation.

It is perhaps worthy of note that spirochetes were demonstrated by dark-field examination in only two cases in which over two months of antepartum treatment had been given, twenty-three (92 per cent) of the positive results having been obtained in cases in which little or no treatment was given (table 4). The average duration of treatment in the group in which positive evidence was obtained was three weeks as compared to nine in the infants in whom the dark-field examination was negative. There is a noticeable tendency for the percentage of syphilitic children detected to decrease as the amount of antepartum treatment increases. It is probable, therefore, that the amount of treatment which the mother receives prior to delivery forms a definite restriction to this method of diagnosis. This method is of greatest value when delivery takes place at the height of the spirochetal invasion of the fetus.

TABLE 4.—*Results of Antepartum Treatment as Shown by Examination of the Umbilical Vein of Eighty-Seven Living Offspring of Syphilitic Mothers*

Duration of Antepartum Treatment, Months	Examination of Umbilical Vein			Offspring			Percentage of Syphilitic Infants Showing Positive Dark-Field Examination
	Positive Results	Negative Results	Percentage of Positive Results	Syphilitic	Nonsyphilitic	Syphilitic, Percentage	
None.....	4	5	44	6	3	67	67
Less than 1..	8	15	35	14	9	61	57
1 to 2.....	5	16	24	9	12	43	56
3 to 4.....	2	17	11	5	14	26	40
More than 4..	0	15	0	1	14	7	0
Total.....	19	68	22	35	52	40	54

SUMMARY

In this series of cases dark-field examination of the umbilical vein has been instrumental in detecting syphilis in nineteen (21.8 per cent) of the eighty-seven living offspring of syphilitic mothers on whom it was tried, with an accuracy which might be considered 100 per cent, and at a time in the infant's life when most other clinical criteria and laboratory aids are unsuccessful. Since thirty-five of the living infants studied, however, were actually proved by observation to have syphilis, it is needless to say that a negative dark-field examination does not rule out syphilis in the child but merely indicates the necessity of studying the infant by other methods. The fact that in 54 per cent of the diseased children the diagnosis was made within a few hours after birth seems to indicate that this method has a diagnostic value which somewhat overshadows its cumbersomeness. It is truly unpractical to examine a specimen of the cord obtained at every delivery in a large maternity service, but, when the diagnosis of syphilis is made in the mother, as it should be, before delivery takes place, then the suspected syphilitic specimens can be examined without placing too great a burden on the physicians in charge, and the diagnosis of congenital syphilis can be established immediately in a limited number of cases.

100 Summit Street, Chestnut Hill.

THE DIAGNOSIS OF CONGENITAL SYPHILIS

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A large number of infants born of mothers known to be syphilitic show no clinical symptoms of the disease during the first weeks of life. Likewise a comparatively large number give negative serum reactions. Roentgenologic evidence of bone lesions characteristic of congenital syphilis is the only other known diagnostic sign of the disease. How reliable this sign is,

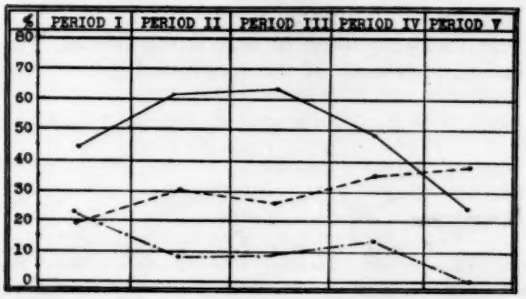

Chart 1.—Graphic comparison of the relative value of the three diagnostic methods in cases in which records of examinations were complete. Straight line indicates roentgenologic; broken line, clinical; dots and dashes, serologic.

compared to the clinical and serologic evidences in the diagnosis, was the question we hoped to answer when we started the work on which this report is based.

We studied a series of infants born of mothers known to have syphilis by making periodic clinical, serologic and roentgenologic examinations during the first year of life.

Our material comprises 104 consecutive infants born at the Cook County Hospital during the two year period from the autumn of 1928 to the autumn of 1930. A careful physical examination was made during the

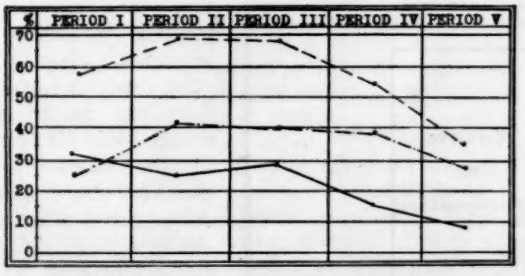

Chart 2.—Probabilities for diagnosis of congenital syphilis at the various periods during the first year. Straight line indicates definite; dots and dashes, suggestive; broken line, total.

first few days of life, blood was drawn for Wassermann and Kahn tests, and roentgenograms were made of the long bones. The same procedure was followed at 6 weeks, at 3 months, at 6 months and at 1 year. Owing to various reasons, the records in some cases are not complete; therefore we have included in our comparative statistics only those cases with recorded observations on all three types of examinations.

Read before the Section on Pediatrics at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 14, 1935.

From the departments of pediatrics of Rush Medical College of the University of Chicago and of the University of Illinois College of Medicine and from the Cook County Hospital, Chicago.

Under the heading "clinical" are included those signs and symptoms usually referred to as suggestive of congenital syphilis: enlarged spleen, rhinitis, marked desquamation of the palms and soles, pustular or macular rashes, pseudoparalysis and the like. Since these symptoms can rarely be considered diagnostic without the support of other evidence, they are here designated "suggestive observations." Very few infants in this group had clinical manifestations sufficiently marked to warrant a diagnosis without support from other diagnostic aids. With this explanation it is evident that in the charts and table the importance of clinical symptoms is more apparent than it is real.

The accompanying table is a statistical summary of the study as it relates to the comparative diagnostic value of clinical, roentgenologic and serologic observations at the various periods studied. Chart 1 shows this comparison in graphic form.

These statistics show in a striking manner the predominant importance of the roentgenologic evidence of

Summary of Cases in Which Records of Examinations Were Complete

		Roentgenologic		Clinical		Serologic	
Periods	Cases	No. Positive	Per Cent Positive	No. Positive	Per Cent Positive	No. Positive	Per Cent Positive
I	79	35	44.3	15	18.98	18	22.8
II	60	37	61.66	18	30.0	5	8.33
III	35	22	62.85	9	25.71	3	8.57
IV	23	11	47.82	8	34.78	3	13.04
V	8	2	25.0	3	37.5	0	0

osseous syphilis in the diagnosis of congenital syphilis during early infancy. During the new-born period there was suggestive clinical evidence of infection in 19 per cent of the cases, serologic evidence in 23 per cent and roentgenologic evidence in 44 per cent; at 6 weeks the figures are 30 per cent, 8 per cent and 61 per cent, and at 3 months 25.7 per cent, 8.6 per cent and 63 per cent respectively.

Chart 2 is suggestive of the probabilities for the diagnosis of congenital syphilis during the first year of life. It would seem from this record that a positive diagnosis can be made in about 30 per cent and a probable diagnosis in an additional 30 to 40 per cent of the cases during the first three months. After three months the chances for diagnosis fall off rapidly, so that by the sixth month a positive diagnosis can be made in only about 15 per cent and a probable diagnosis in an additional 40 per cent.

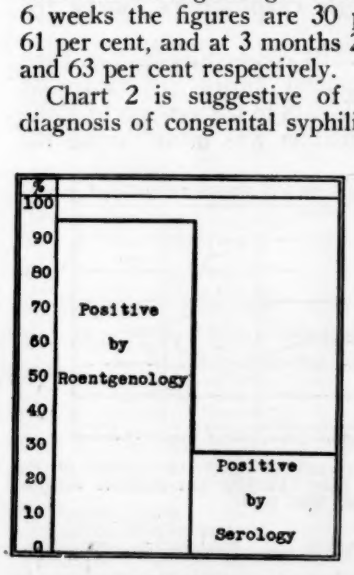

Chart 3.—Relative value of roentgenology and serology in the diagnosis of sixty-seven definitely infected infants during the first year.

Not all infants of syphilitic mothers show evidence of infection in the first year. The degree of fixation of the virus in the mother probably determines the occurrence of symptoms and signs in the offspring.

We were unable to get either satisfactory data concerning the time of the mother's infection or accurate enough information about her treatment to draw any conclusions as to the relation of these factors to the incidence of or the degree of severity of infection in the infant. However, 83.7 per cent of the infants studied in this series showed either definite or suggestive evidence of infection at some time during the first year. Sixty-seven cases, or 64.4 per cent, we considered positively infected. In 95 per cent of these sixty-seven positive cases a diagnosis could be made

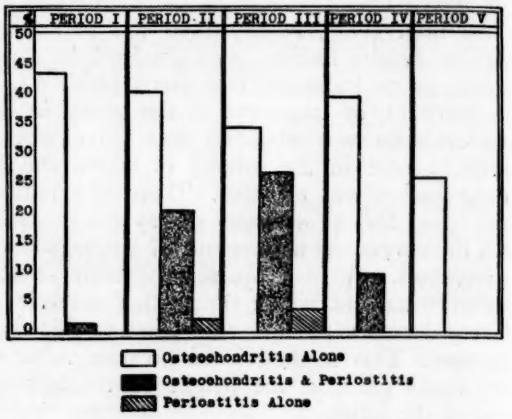

Chart 4.—Relative incidence of osteochondritis alone, both osteochondritis and periostitis, and periostitis alone in the various periods.

through the evidence of osseous lesions as revealed by roentgenograms. Only 29 per cent of these sixty-seven cases gave positive serologic tests.

The changes that occurred in serum reactions deserve some attention. In seven infants the Kahn reaction was 1 plus and in four it was 2 plus, with a negative Wassermann reaction in the first period; they all had negative Kahn reactions in the second period. Three infants who had 2 plus Kahn and 2 plus Wassermann reactions and one who had a 4 plus Kahn and a 4 plus Wassermann reaction in the first period were Kahn negative and Wassermann negative in the second period. Of three infants whose serum reactions were negative in the first period, two gave 4 plus reactions in the second period and one in the fourth period. One infant with a 1 plus Kahn and a negative Wassermann reaction in the first period had a 4 plus Kahn and a 4 plus Wassermann reaction in the fourth period, and another with a 2 plus Kahn and 1 plus Wassermann reaction in the first period had a 4 plus Kahn and a 4 plus Wassermann reaction in the third period. These observations indicate that too much reliance on the serum reactions during the new-born period may lead to errors in diagnosis.

No attempt will be made in this report to discuss the bone changes in congenital syphilis, but in chart 4 we show graphically the relative incidence of osteochondritis occurring alone, of osteochondritis and periostitis occurring together, and of periostitis occurring alone in the various periods of the first year.

Periostitis is almost never present in the new-born. It becomes moderately frequent by the sixth week and is present in more than half of the cases showing osteochondritis by the third month. It is extremely rare for periostitis to occur as the only change in the bones of syphilitic infants.

COMMENT

The frequency of the occurrence of pathologic changes of the bone in congenital syphilis has been common knowledge among pathologists for many years.

As early as 1778 Nils Rosen [1] called attention to the frequency of bone lesions in congenital syphilis and emphasized the value of skeletal examination in these cases. In 1864 Ranvier [2] mentioned arrest of ossification as a paramount manifestation of congenital syphilis. The observations of Wegner [3] were published in 1870 and those of Parrot [4] in 1871-1873. Fränkel [5] emphasized that bone lesions are most pathognomonic of congenital syphilis in 1873.

With the development of roentgenology it became possible to visualize the pathologic lesions in the osseous system. The first demonstration of roentgenograms of syphilitic lesions of the bones in congenital syphilis was made by Hochsinger [6] in 1900. In 1907 Oluf Thomsen [7] of Denmark pointed out that the roentgen ray offers the best method of discovering congenital syphilis in new-born infants otherwise showing no evidence of the disease. The German and French literature of the last twenty years contains much important information on this subject. Among the outstanding contributions are those of Eugen Fränkel,[8] Béla Alexander,[9] Hans Wimberger,[10] and M. Péhu.[11] Thus the significance of bone lesions in congenital syphilis has been much stressed in Europe, but until Stafford McLean [12] published his thorough and exhaustive studies in 1931 the American literature contained very little on the subject.

Our purpose in this report is to call attention once more to the overwhelming significance of osseous lesions as revealed by the x-rays in the diagnosis of congenital syphilis.

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ABSTRACT OF DISCUSSION

DR. JOSEPH YAMPOLSKY, Atlanta, Ga.: With the intensive antepartum treatment of syphilitic mothers given in most of the clinics it is becoming apparent that the diagnosis of congenital syphilis will have to be made less on clinical signs and more through serologic and roentgenologic methods of examination. Between 50 and 60 per cent can be diagnosed at birth. Careful monthly serologic follow ups will probably by the fourth month determine all syphilitic cases, as it has been proved by other writers that, if the Wassermann reaction is negative after the fourth month, it is probable that an infant although born of a syphilitic mother probably does not have syphilis. It has been interesting to note that an infant whose spinal Wassermann reaction is positive and whose mother is definitely syphilitic is usually syphilitic in character. Some may not be syphilitic, as has been proved by Dunham, who demonstrated that the Wassermann reaction in these cases becomes negative later. She states that this phenomenon is due to the fact that the complement fixing substance of the mother's blood is transmitted to the infant, in whom it remains for a few weeks and then disappears. In a study of 1,372 living babies by McCord, 11.4 per cent of full term babies later demonstrated a positive serologic reaction and 28 per cent of premature babies showed the same evidence. When no antepartum treatment was given, 22.1 per cent of the patients demonstrated a strongly positive reaction, as against 2 per cent in whom sufficient antepartum treatment had been administered. There is no doubt in my mind that the roentgenologic examination of the new-born is an efficient method for the determination of syphilis. In 309 dead infants, McCord demonstrated roentgenologically syphilitic bone changes in 62.3 per cent. It may be interesting to note that in the same patients the organism of syphilis was found in 61 per cent, demonstrating that the results of roentgenologic examination were favorably comparable with the finding of the organisms. In another study of seventeen cases treated with acetarsone at the ages of from a few months to 12 years it was possible to demonstrate roentgenologic changes in fourteen, and therefore I agree with the authors that roentgenologic examination is important in the diagnosis of early congenital syphilis and that the typical observations will be those of osteochondritis, or of osteochondritis and periostitis occurring together in early infancy, and of periostitis occurring alone in the various periods only after the first year of life. I do not wish to go into the diagnosis of the demonstration of congenital syphilis through the examination of the mother's placenta, as antisyphilitic treatment of pregnant women has a definite influence on the histologic appearance of the placenta. I doubt that correct diagnosis can be made in that manner.

DR. H. HARRIS PERLMAN, Philadelphia: Diagnosis of prenatal syphilis in the early stages has become decidedly more difficult within the past decade, because of the intensive campaign that is being waged with unrelenting seriousness in antepartum clinics. This serious drive has resulted in a scarcity of clinical material to a degree so marked that the Sigma Clinic of the Children's Hospital, with an average weekly attendance numbering eighty or more patients, has been handicapped in presenting to our postgraduate students infants and children demonstrating the classic signs of so-called congenital syphilis. Contrast this situation with that which prevailed only ten or fifteen years ago. From the academic point of view the problem in prenatal syphilis today is particularly one of early diagnosis. The roentgenogram has been invaluable in demonstrating indisputable signs of prenatal syphilis when evidence of this disease is lacking in the new-born, when a history of syphilitic infection in either parent and other members of the family is indefinite or of doubtful value, and when criteria for the diagnosis of prenatal syphilis in the infant yield presumptive evidence alone. A diagnosis of syphilis on purely roentgenologic evidence without serologic or other confirmation, however, must be considered of doubtful value unless the roentgenologic signs are interpreted by an expert. It is a matter of routine at the Sigma Clinic of the Children's Hospital to have roentgenograms of the skeletal system taken in all infants under 1 year of age. Needless to state, a positive diagnosis of prenatal syphilis is frequently made by roentgen examination alone when other diagnostic means, including the blood Wassermann and Kahn reactions, are negative. Dennie emphasizes the importance of the roentgenologic examination of the long bones in the following words: "The roentgenologic view is diagnostic in that the worm eaten areas can be seen between the epiphysis and the diaphysis and often the capsular portion fits like a cork in the end of the shaft." It is generally believed that the bones are more likely to be involved in prenatal syphilis than in acquired syphilis. Usually several of the bones are involved. Epiphysitis shown as a marked rarefaction or destruction at the epiphyseal line of the long bones is seen in from 70 to 90 per cent of cases of prenatal syphilis during the first three months of life. Periostitis is a later manifestation and is demonstrable as a thickening along the entire shaft of the bone. Findlay, in his series of cases, found an incidence of bone lesions of 25 per cent. Dennie, in a study of fifty cases, stated that 40 per

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9. Alexander, Béla: Die ostealen Veränderungen bei kongenitaler Syphilis, Leipzig, Johann Ambrosius Barth, 1915; cited by McLean.[12a]
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11. Péhu, M., cited by McLean.[12a]
12. McLean, Stafford: (*a*) I. The Roentgenographic and Pathologic Aspects of Congenital Osseous Syphilis, Am. J. Dis. Child. **41**: 130-152 (Jan.) 1931; (*b*) II. The Correlation of Roentgenologic and Pathologic Aspects of Congenital Osseous Syphilis, ibid. **41**: 363-395 (Feb.) 1931; (*c*) III. Correlation of the Roentgenologic Picture with the Gross and the Microscopic Examination of Pathologic Material in Congenital Osseous Syphilis, ibid. **41**: 607-675 (March) 1931; (*d*) IV. The Correlation of the Clinical Picture with the Osseous Lesions of Congenital Syphilis as Shown by the X-Rays, ibid. **41**: 887-922 (April), 1128-1171 (May) 1931; (*e*) V. The Osseous Lesions of Congenital Syphilis, Summary and Conclusions in One Hundred and Two Cases, ibid. **41**: 1411-1418 (June) 1931.

cent had no other syphilitic signs than the bone lesions. In a survey of thirty early cases of prenatal syphilis by Broomer, fourteen showed no evidence of any bone lesions; osteochondritis and periostitis were present in twelve, dactylitis in one and Parrot's node was discovered in one. In most instances the blood serologic examinations have paralleled the roentgenologic and clinical observations.

DR. A. H. PARMELEE, Oak Park, Ill.: I was afraid that nobody would believe the figures that I gave today. In fact, I was astounded at them myself. I think that they show two things: first, that serologic tests are not reliable during the early months of the first year in the diagnosis of congenital syphilis, and second, that physicians must learn to make their own roentgenologic interpretations. I am convinced that, if these films had been sent to the roentgenologist for his interpretation alone, unless he was one who had had special training in the recognition of osteochondritis, perhaps half of them would have been returned as negative. My appeal is that every pediatrician should become familiar with the early evidences of syphilis as revealed by roentgenology. The worm eaten appearance is not an early manifestation. The earliest manifestation is the thickened epiphyseal line with a narrow zone of rarefaction immediately shaftward in the metaphysis. One does not find periostitis in the new-born. It is found after six or eight weeks or later. My purpose in this paper primarily is to show that in the general run of practice, when physicians examine children physically, send the blood specimen to a laboratory for Wassermann and Kahn tests and examine the roentgenologic films of the long bones, they will find a very small number that show physical signs of syphilis and a surprisingly small number that will give positive serologic evidence of syphilis; but, if physicians become familiar with the roentgenologic signs of syphilis, they will find a surprisingly large number that do show some evidence of syphilis.

JUVENILE DEMENTIA PARALYTICA

WITH SPECIAL REFERENCE TO ITS TREATMENT WITH MALARIA

UDO J. WILE, M.D.
AND
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Up to 1917, when Wagner-Jauregg presented his remarkable results in the treatment of dementia paralytica with malaria, the prognosis was extremely poor. This new form of treatment was soon instituted by others, who corroborated his observations as the years went by. O'Leary and Welsh [1] reported similar results at the Mayo Foundation. One of us,[2] reporting the observations in this clinic, found similar results.

The prognosis in juvenile dementia paralytica has been considered more unsatisfactory than in dementia paralytica. Almost as soon as malaria and other forms of fever therapy were used in adult dementia paralytica, it was tried in the juvenile type. O'Leary and Welsh [1] reported little if any improvement. Though the consensus is that the prognosis in the juvenile type is almost as poor today as it was before 1917, very little has been written on the malaria treatment of this condition.

There were seen in this clinic 1,040 cases of congenital syphilis from Jan. 1, 1925, to March 1, 1932, of which thirty-one cases were juvenile dementia paralytica. A presentation of these cases with special reference to a comparison of those treated with malaria and those treated without malaria will be presented in this paper.

OBSERVATIONS

Sex.—For every case of adult dementia paralytica in the female, about seven are diagnosed in the male. The protective effect of sex and pregnancy being eliminated in juvenile dementia paralytica, it would be expected that a larger proportion of females would be diagnosed than was found in the case of adult dementia paralytica. Most other writers state that juvenile dementia paralytica is about equally divided between the sexes; however, in this series twenty-three, or 74.2 per cent, were males and eight, or 25.8 per cent, were females. It could possibly be deduced from this that the protective influence of sex, though a factor, is of less importance than is that of pregnancy.

Age of Onset.—The youngest patient to be clinically diagnosed as having juvenile dementia paralytica was 2 years of age and the oldest was 31. In most of the patients symptoms developed between the ages of 6 and 9 years. It was uncommon before 5 years or after 20 years in this series.

History of Parental Syphilis.—Owing probably to incomplete observation of the families of these patients, a definite diagnosis of syphilis in the parents was made in but a few cases. Eight mothers and six fathers were so diagnosed. A suggestive history in the form of miscarriages or stillbirths was obtained in nine other mothers. In only one of these cases was the central nervous system involved in a parent. This was a father who died of dementia paralytica in a state hospital. Others report a common involvement of the central nervous system in the parents. Amelian reports six cases in which both parents had dementia paralytica. In Frölich's [3] cases dementia paralytica existed in 16.4 per cent of the parents; in an additional 13 per cent, tabes or cerebrovascular syphilis was demonstrated. Klauder and Solomon [4] in twenty-three cases found neurosyphilis in three parents.

Syphilis in Siblings.—In only two cases was definite evidence of hereditary syphilis found in a living sibling. A history of miscarriages and stillbirths was very common in this series. In no case was even suggestive evidence of involvement of the central nervous system found in a sibling. Klauder and Solomon [4] in their series had a brother and sister with juvenile dementia paralytica.

Symptomatology.—The symptoms that caused these patients to come to the hospital were much the same as those mentioned by other writers. The symptomatology in patients at the adolescent age was similar to that found in adults. In the younger group, that is, the preadolescent, the symptoms were in many ways unlike those in adult cases. Epileptic seizures have been recorded as common occurrences by others in juvenile dementia paralytica. They were not common in this series, being found in only five cases. Twenty-five of the patients were markedly disoriented or demented, five were mildly so, and one showed no mental change at the time of diagnosis. The various symptoms, such as hallucinations, euphoria, delusions and irritability, as found in adult dementia paralytica, were found in most

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Studies and Contributions from the Department of Dermatology and Syphilology, University of Michigan Medical School, service of Dr. Udo J. Wile.

1. O'Leary, P. A., and Welsh, A. L.: Treatment of Neurosyphilis with Malaria, J. A. M. A. **101**: 498-501 (Aug. 12) 1933.
2. Wile, U. J.: The Adequacy of Treatment in the Control of Syphilis, J. A. M. A. **103**: 648-651 (Sept. 1) 1934.
3. Frölich, W.: Ueber allgemeine progressive Paralyse der Irren vor Abschluss der körperlichen Entwicklung, Diss., Leipzig, 1901.
4. Klauder, J. V., and Solomon, H. C.: Juvenile Paresis, Am. J. M. Sc. **166**: 545 (Oct.) 1923.

of those cases, especially in those showing marked degeneration. Disturbances of memory and retardation in school were outstanding symptoms.

Objective Signs.—The following changes were found in these cases: Changes in the retina were present in eleven, chiefly in the form of disseminated choroiditis, with optic atrophy in four. Hyperactive reflexes, especially the knee jerks and achilles jerks, were found in most cases, the Babinski sign in four, evidence of an old hemiplegia in two, and incontinence of urine and feces or both in five cases. Though the speech could not be accurately tested in many because of the age, a defect was noted in twelve cases. This varied from a mild slurring of the r's to complete inability to speak.

Klauder and Solomon [4] mention that the stigmas of congenital syphilis were rare in their cases. In this group stigmas were fairly common. Sixteen of the patients had one or more of the Hutchinson triad. Thirteen had hutchinsonian teeth and four had or had had interstitial keratitis, but eighth nerve deafness was not noted in any case. Nearly all the other patients had one or more suggestive stigmas such as prominent bossae, anterior bowing of the tibia, high arch palate, and minor stigmas.

Laboratory Studies.—The blood serologic reactions were strongly positive in all thirty-one cases. The spinal fluid serologic reactions were strongly positive in all cases in which a spinal fluid examination was made. The one case in which a spinal puncture was not done was clinical dementia paralytica. A colloidal gold curve in the paretic zone was found in twenty-six cases, a tabetic type of curve was found in four, and in one no colloidal gold test was made, owing to a bloody tap. The last case was without doubt dementia paralytica. The cases presenting curves in the tabetic zone were all clinical dementia paralytica. Juvenile dementia paralytica seems to differ in this series from dementia paralytica in adults, in which the spinal fluid almost invariably gives a curve in the paretic zone.

TABLE 1.—*Follow Up with Regard to Deterioration at Time of Diagnosis*

	Deterioration		
	Marked	Mild	None
Number	24	6	1
Died	6	1	0
Definitely alive	13	4	1
No trace	6	1	0
Same	6	1	1
Worse	6	2	0
Better	1	1	0
Institution	5	0	0

Results with Therapy.—Answers were received to twenty-four of the thirty-one queries sent out. Seven of the patients, or 29.1 per cent, were dead; seven, or 29.1 per cent, had an unchanged condition; eight, or 33⅓ per cent, were worse, and two, or 8.3 per cent, were improved.

From table 1 it will be seen, as would be expected, that the results were more unfavorable in patients showing marked involvement at the time of diagnosis.

From table 2 it will be seen that slightly better results were found in patients over 20.

Most of the fifteen patients who did not receive malaria therapy were treated with the heavy metals. Most of those who received malaria also had the benefit of heavy metal therapy. Of those who received malaria an answer was received from fourteen; two, or 14.2 per cent, were dead; four, or 28 per cent, were unchanged; six, or 42.6 per cent, were worse, and two, or 14.2 per cent, were improved. Of the fifteen who did not receive malaria, an answer was received in ten cases; three, or 30 per cent, were unchanged; two, or 20 per cent, were worse, and five, or 50 per cent, were dead. The group that received malaria were in somewhat better mental condition at the time of diagnosis,

TABLE 2.—*Follow Up According to Age at Onset*

	Age				
	0 to 5	6 to 10	11 to 15	16 to 20	20+
Number	1	13	8	7	3
Died	0	2	2	2	1
Definitely alive	1	0	0	0	0
No trace	0	4	2	1	0
Same	1	2	3	1	1
Worse	0	4	1	3	0
Better	0	1	0	0	1
Institution	0	2	0	0	0

which may account for some of the statistical improvement. Only one patient is now able to cope with his environment at this time, a man aged 26 at the time of diagnosis in 1927. He had diagnostic evidence of congenital syphilis in the form of Hutchinson teeth, prominent bossae, anterior bowing of the tibia, and a high arched palate. Clinically and by laboratory studies he had dementia paralytica in 1927. He had had considerable intravenous and intramuscular therapy in 1919. When the diagnosis of juvenile dementia paralytica was established in 1927, he received sixteen malaria chills and began to improve shortly thereafter. He was able to return to work and has been working up to the present time with only a small amount of subsequent therapy in the form of potassium iodide by mouth and mercury rubs. The spinal fluid has remained four plus, though the colloidal gold curve has changed from a paretic to a tabetic type.

All the others about whom a report was received are dead, are living a vegetative existence in an institution or at home, or are so mentally or physically retarded as to be almost a total loss to their families and to society at large.

It is difficult to decide from such a small series what cases should be selected for this form of treatment, if any. The cases suitable for malaria treatment are those, it would seem, in which the diagnosis is made by a routine spinal fluid examination before any clinical symptoms or signs have appeared, or those in which the mental changes are very mild and have come on fairly late in adolescence or early adult life. Such cases in the juvenile type are rare.

CONCLUSIONS

1. The prognosis in juvenile dementia paralytica has been changed little if at all by the advent of malaria and other forms of fever therapy.

2. Malaria therapy prolongs life in juvenile dementia paralytica in some cases. It seems to retard the progressive dementia in a few.

3. The slight improvement that is found in a few cases does not raise these unfortunate patients to the level of social and intellectual usefulness and only adds to the burden the family or society or both must bear.

4. Malaria therapy adds very little to the prognosis in the large majority of cases and should not be used except in the rare selected cases.

MENINGOCOCCIC MENINGITIS IN CHILDREN

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Meningococcic meningitis in nonepidemic periods is essentially a disease of childhood. During epidemics and sharp outbreaks, the age incidence is considerably higher. The reason for this I do not know. Table 1 shows the age incidence in more than 1,300 cases of meningococcic meningitis. The distribution by age and etiology of the other more than common forms of meningitis is also shown. Table 2 shows the distribution by age and etiology of more unusual types of meningitis. Table 1 shows that by far the largest number of these cases of meningococcic meningitis occurred in the first year of life. It is at this age that the diagnosis is most difficult in the early stages of the disease and the case fatality is the highest. The same statement applies in a modified degree to children in the second year of life.

The clinical picture in older children follows closely that in adults. This is so familiar that no extended discussion is necessary. It may be well to point out, however, that in these older patients the disease may be divided into three types:

1. The usual type, in which there may be a transient bacteremia indicated by a petechial or even macular rash, which appears early and soon fades but in which a positive blood culture is only rarely obtained.

2. The septicemic type, in which a septicemia precedes the meningitis by a varying length of time and may persist after the meningitis has developed. In this type of case, the hemorrhagic rash shows a tendency to persist and recur in crops, and a blood culture can be obtained.

3. The fulminating type, in which there is an unusually violent onset with an overwhelming infection, usually both of the blood stream and of the meninges. In this type, death may occur within a few hours. Reference must also be made to meningococcic septicemia occurring without meningitis. This discussion applies particularly to older children and adults.

In the first and even in the second year of life, it is my impression that the fulminating type is rather uncommon, and so also is septicemia. The early symptoms in infants do not as a rule suggest an involvement of the central nervous system. The onset, while usually sudden, is not so abrupt as in older patients. There are almost always signs of involvement of the gastro-intestinal tract, vomiting being common and greenish, slimy stools almost constantly present. There is an irregular fever higher than one would expect in gastro-enteritis. Convulsions may occur at the onset but not more frequently than at the beginning of other acute infections in infants. There is usually a tension or bulging of the fontanel. A Brudzinski sign may sometimes be elicited rather early. Usually it is not until the disease is fairly well advanced that there develop stiffness of the neck and back or opisthotonos, changes in the reflexes, strabismus or severe convulsions. Debré once said "In times of epidemic think of meningitis and do a lumbar puncture in every infant sick without apparent cause." This advice, it seems to me, is even more applicable in times when there is no epidemic; for at these times, in my experience, meningitis is more likely to occur in young infants and the consideration of a diagnosis of meningitis is not so likely to occur to the physician.

There are many conditions and diseases in which signs and symptoms develop resembling a meningitis. It can be determined whether or not meningitis is present only by a lumbar puncture and the examination of the spinal fluid. If meningitis is present, the kind can be determined only by a cultural examination of the spinal fluid, except in the case of tuberculous meningitis. In this disease the diagnosis may be established by the demonstration in the smear of acid-fast bacilli. Table 3 shows the characteristics of the spinal fluid in the various forms of meningitis and in certain diseases in which a differential diagnosis must be made.

It is important to emphasize that every spinal fluid withdrawn should be completely examined. Smears from clear fluids should be stained by the Ziehl-Neelsen method, smears from cloudy fluids by the Gram method, and smears from hazy fluids by both methods. In the case of purulent meningitis, only a tentative diagnosis can be made from the examination of the stained smear, as the organisms in spinal fluids are occasionally pleomorphic and the gram-positive organisms may decolorize. A careful study of the cultures is therefore necessary. This should be made on a variety of mediums, including those suitable for anaerobic growth. Cultures are not to be considered negative until they have been incubated for at least two weeks. All cultures isolated should be thoroughly studied to determine as nearly as possible their exact classification and type.

TABLE 1.—*Meningitis: Age and Etiology*

	Meningococcus	Pneumococcus	Streptococcus	Bacillus Influenzae	Tubercle Bacillus	Miscellaneous	Total
1-2-3 months	44	10	13	3	4	14	88
4-5-6 months	84	6	10	13	27	10	150
7-12 months inclusive	95	17	4	24	107	21	268
Total under 1 year	223	33	27	40	138	45	506
1- 2 years	96	14	5	36	189	10	350
2- 3 years	61	11	12	16	113	8	221
3- 5 years	156	19	23	21	165	13	397
5-10 years	247	33	94	14	142	29	559
10-20 years	273	29	33	7	103	40	485
Over 20 years	291	90	39	8	123	70	621
No age stated	11	6	5	..	13	4	39
Total	1,358	235	238	142	986	219	3,178

TABLE 2.—*Unusual Types of Meningitis: Age and Etiology*

	Staphylococcus	Bacillus Coli	Actinomyces	Bacillus Pyocyaneus	Friedländer's Bacillus	Torula	Typhoid-Dysentery	Micrococcus Catarrhalis	Sporotrichum	Mixed Infections	Kind Not Determined	Total
1-3 months	..	5	..	..	..	..	1	1	..	2	5	14
4 through 6 mo.	..	..	..	..	..	..	..	..	..	2	8	10
7 through 12 mo.	2	1	2	..	1	..	..	..	..	4	11	21
Under 1 year	2	6	2	..	1	..	1	1	..	8	24	45
1- 2 years	1	..	..	..	..	..	..	1	..	1	7	10
2- 3 years	1	..	..	1	1	..	..	..	..	..	5	8
3- 5 years	3	..	1	.	..	..	..	..	..	2	7	13
5-10 years	4	1	1	1	..	..	1	..	..	3	18	29
10-20 years	7	..	3	..	..	2	..	..	1	7	20	40
Over 20 years	15	1	2	2	3	1	..	..	..	5	41	70
No age given	..	..	..	..	..	..	..	..	..	..	4	4
Total	33	8	9	4	5	3	2	2	1	26	126	219

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It has recently been shown that the tubercle bacilli in spinal fluids may be successfully cultured on Bordet-Gengou medium, even when they are so few in number that they cannot be demonstrated in the smear. This method is more satisfactory than the inoculation of guinea-pigs. The strains of the meningococcus have been variously grouped by different workers. Generally, Gordon's division into four groups has been followed. Groups 1 and 3, which are most commonly present, at least in New York City, show more or less close relationship by agglutination and absorption. There are always a certain number of strains that do not fall definitely into any one of these groups. For these reasons, a polyvalent serum is more satisfactory than a monovalent serum.

In purulent meningitis the cell count is of doubtful value. In the first place, it is difficult to obtain a uniform mixture of the cells through the fluid, as the cells settle out rapidly. Again, if the fluid is collected in successive tubes there is a marked variation in the cell count in the different specimens. For these reasons, comparisons of the cell count on succeeding days are likely to be of no value and even misleading. The protein requires no discussion. The sugar content is important. Early in meningococcic meningitis the sugar may be normal; as the disease progresses it becomes decreased or even absent. If the patient improves, the return of the sugar to normal usually parallels the improvement in the patient's condition. A fall in sugar content not infrequently foretells an exacerbation.

TABLE 3.—*Characteristics of the Spinal Fluids in Various Conditions*

Meningeal Condition	Amount, Cc.	Appearance	Cytology	Bacteriology	Albumin	Globulin	Sugar
Normal	5-10	Clear	5 to 10 cells; mononuclears	Negative by smear and culture	±	±	Normal
Meningism	20-50	Clear	5 to 10 cells occasionally more; mononuclears	Negative by smear and culture	± to +	± to +	Normal
Poliomyelitis and encephalitis	15-35	Clear or slightly hazy; fibrin web may form	15 to 1,000 cells; mononuclears usually predominate; rarely polynucleosis at any stage	Negative by smear and culture	+ to ++	+ to ++	Normal or high
Tuberculous meningitis	20-50	Clear to hazy; fibrin web	50 to 300 cells; usually mononucleosis; rarely polynucleosis	Tubercle bacilli by smear and culture on Bordet-Gengou medium	+ to +++	+ to +++	Rarely normal; usually decreased
Serous meningitis	15-35	Hazy to cloudy	Up to 1,000 or more, usually polynucleosis	Negative by smear and culture	+ to ++	+ to ++	Normal
Purulent meningitis	20-60	Hazy to purulent	Indefinitely high polynucleosis	Infecting organism by smear and culture	+ to ++++	+ to ++++	May be normal at onset; decreases as disease advances

The value of serum in the treatment of meningococcic meningitis has been generally accepted for nearly thirty years. In spite of this, there is still a wide divergence of opinion in regard to its proper administration. Certain factors contribute to the confusion of ideas. In the first place, no absolutely uniform rules can be laid down for treatment, since the disease varies so widely in its manifestations in different outbreaks and at all times in individual patients. Secondly, there is, unfortunately, no absolutely reliable laboratory test for the therapeutic value of the serum. For this reason, at times serum of poor quality has been used with resulting failure of proper response on the part of the patient. Under these conditions, in desperation physicians have resorted to larger and larger quantities of the serum in the hope of obtaining better results.

From an experience covering nearly twenty-five years, my associates and I are convinced that the best results are obtained by moderation in the use of the serum. If the patient is not of the septicemic type with a positive blood culture, we think serum is indicated only intraspinally. Patients suffering from meningitis are acutely ill and deserve to be disturbed as little as possible. Serum is a foreign protein, more or less toxic, and the injections of unduly large amounts may have distinctly unfavorable effects on the patient. For these reasons, we are opposed to the indiscriminate administration of serum intravenously and intramuscularly and to the intraspinal administration of the serum every twelve to eight and even every six hours, as is sometimes advocated. It is not known in exactly what way the serum acts. It is not bactericidal and it probably functions mainly by increasing the phagocytic power of the cells. It can do this in quite low dilution. It has been shown that serum injected intraspinally is not entirely eliminated for about twenty-four hours. It therefore seems likely that, when too frequent lumbar punctures are done, cells at the maximum of their fighting power are removed and the purpose of the treatment is defeated. It is our custom, whenever a lumbar puncture reveals a cloudy or hazy spinal fluid, to give immediately antimenigococcus serum intraspinally. Further administration will depend on the examination of the spinal fluid, but all cases are treated on the assumption that they are meningococcic meningitis until some other organism is isolated. We inject antimeningococcus serum intraspinally about once in twenty-four hours after thoroughly draining the subarachnoid space. It occasionally may happen that the spinal fluid is under so greatly increased pressure that a lumbar puncture may have to be performed more often than once in twenty-four hours for relief of pressure. In this condition, of course, serum must be given following each puncture. The dose of serum is usually about 20 cc. if as much or more fluid has been withdrawn. Occasionally a larger dose than this is used. The serum should be warmed to body temperature and administered slowly by gravity. The daily administration of the serum is continued until at least two successive fluids show no organisms by smear or culture. If at this time the patient is fairly well clinically, the administration of the serum is stopped, at least temporarily. The lumbar punctures are continued every twenty-four or forty-eight hours for a varying length of time to relieve the pressure and to make sure that the fluid is sterile.

If block develops—complete or partial—the subarachnoid space must be drained and the serum administered either by cisternal or by ventricular puncture. If the

fontanel is still open, ventricular puncture is to be preferred to cisternal, as it is safer and more effective, since the block may be high. Sometimes block may be relieved by the cautious injection after lumbar puncture of air, physiologic solution of sodium chloride, or serum. After this method of treatment is begun, lumbar punctures should be performed at intervals to see whether the block has been relieved. In the septicemic type of case, serum should be administered intravenously as well as intraspinally. Daily injections of from 50 to 100 cc. of serum diluted with an equal amount of physiologic solution of sodium chloride should be made. This should be done very slowly by gravity. A daily blood culture should be made preceding the injection of the serum so that the treatment may be discontinued when the blood stream is sterile. Occasionally, one sees cases of meningococcic septicemia without meningitis. These should be treated by the intravenous administration only of serum.

I have had very little personal experience with the new Parke Davis antitoxin for the treatment of meningococcic meningitis. The clinical picture of certain cases of meningitis indicates a rather severe toxemia. It would seem, therefore, that a serum with a high antitoxic content may be of great value, especially in this type of case.

The use of autogenous vaccine in prolonged cases of meningitis, and in the few cases which are or have become intolerant to serum, has seemed to be of value in certain instances. This vaccine should be administered both subcutaneously and intraspinally. The subcutaneous injections may begin with a dose of from 100 to 250 millions and are repeated every three or four days, the dose being gradually increased to a billion or more. The intraspinal administration should be done daily, beginning perhaps with a dose of 50 million diluted in physiologic solution of sodium chloride or in serum, if the patient is not intolerant to serum, and increasing by 50 million each day. The whole question of dosage is empirical.

We have never tried forced spinal drainage in meningococcic meningitis. We have used it in other forms of purulent meningitis but our own results have not been particularly encouraging.

Complications must be treated as they arise. Perhaps the only complication that can be successfully treated by serum is the purulent arthritis which occasionally develops. This usually subsides under symptomatic treatment, but in some instances it may be necessary to aspirate the joint and inject the serum.

Recently it has happened that a very few patients have died soon after lumbar puncture and the administration of serum. At necropsy it was found that an acute hydrocephalus had developed, so that when the equilibrium of the spinal fluid was disturbed by the withdrawal of fluid there had been a herniation of the cerebellum with compression of the medulla. In these cases there had been unusually excruciating headache with or without indications of papilledema. In such instances it is advisable to give a hypodermic of 3 grains (0.2 Gm.) of caffeine preceding the spinal tap. This will reduce the extreme intracranial pressure, as shown by Foster Kennedy and his collaborators, and tend to prevent this occurrence.

General treatment of meningococcic meningitis is that of any severe acute infection. It is important that the patient have adequate rest, and for this purpose sedatives must be given as indicated. Morphine hypodermically should not be used, as it increases the intracranial pressure. A sufficient amount of nourishment must be given, preferably in small amounts at frequent intervals. The fluid intake must be maintained by clysis if necessary. The fluid should be of such a nature as to overcome the tendency to acidosis. Care must be taken to see that retention of urine is not neglected. Proper elimination by the bowels may be accomplished by small doses of magnesia magma combined with enemas.

While the case fatality in children of the first or even the second year of life is high, that between the third and fifteenth year is the most favorable of any age group. I would emphasize again the importance of a conservative method of administering the serum. This opinion is based not only on our own experience but also on that of a number of hospitals that have followed this method.

Foot of East Fifteenth Street.

ABSTRACT OF DISCUSSION

DR. BRONSON CROTHERS, Boston: There are one or two points that seem to me worth thinking about. Dr. Neal says that ventricular puncture is more effective and less dangerous and is also higher than cisternal puncture; that is, the assumption is made that the serum in the ventricle is above that put into the cistern. Anatomically, that is correct, but it does not enter the subarachnoid space any higher than that put into the cistern. I think that cistern puncture is extremely dangerous in meningitis, because it is very difficult to tell where the needle is. However, I think one gets the serum where one wants it rather better by the cisternal than by the ventricular route, provided one can get in. That brings up one other point. If neither the cistern puncture nor the ventricle puncture throws the serum into the supratentorial space, it does seem to me logical in occasional cases to introduce the serum into the supratentorial subarachnoid space. Another point is the question of using intraspinal vaccine. I am not expert in this matter, but it seems to me illogical in theory. I should like to know from Dr. Neal whether she feels that the results are so good that she is willing to keep on with that with some enthusiasm in spite of its apparently illogical character.

DR. EMILY P. BACON, Philadelphia: The high incidence of meningococcic meningitis in infants in Dr. Neal's series shows that there were four and one-half times as many cases in infancy as in older children. Early diagnosis and treatment are exceedingly important, but, as in many other diseases of infants, it is exceedingly difficult because early symptoms and signs are not typical. Dr. Neal has stressed that neurologic symptoms are often absent early and that symptoms common in gastro-enteritis are often present, such as vomiting, slimy stools, high fever and marked distress. But there are points of differentiation that help in making the early diagnosis. The seasonal incidence is apt to be different and the fever in gastro-enteritis is usually not so high as in meningococcic meningitis, and yet the baby is much sicker, is more toxic, and dehydrates earlier. Also, the fontanel is depressed in gastro-enteritis, whereas almost always in infants with meningococcic meningitis the fontanel is at least tense. However, if one is in doubt, a lumbar puncture must be done to exclude meningococcic meningitis. Another condition in infants that is difficult to differentiate at times from meningococcic meningitis is infection of the upper respiratory tract with symptoms of vomiting, fever, red throat and red ears. I have recently seen these symptoms in two cases in which it was difficult to decide whether they denoted an infection of the upper respiratory tract alone or whether they were coincident with meningococcic meningitis and of minor importance. In one child, a baby of 6 months, the ears were opened three times and pus was obtained once. Lumbar puncture was not done until the tenth day, because no neurologic sign was present, except a little tenseness of the fontanel. The spinal fluid was reported to be clear but was not examined further. Three days later neurologic symptoms were more definite, the puncture was repeated, and meningococci were found in the spinal fluid.

Treatment was instituted too late. The child is developing hydrocephalus, and prognosis for cure is poor. As to treatment, most are agreed that serum is at present the best therapeutic agent and that intrathecal treatment given every twenty-four hours is best for the patient as a rule. If the infant is seen early in the disease, associated intravenous therapy is indicated, provided there is available a doctor skilled in intravenous therapy in infants.

DR. JOSEPHINE B. NEAL, New York: I have practically nothing to say in closing except with regard to the point Dr. Crothers brought up. The vaccine is still being used in some of the chronic cases and in cases in which intolerance to serum has developed. My idea in giving vaccine intraspinally was to get a reaction intermediate between the slow response that is obtained when vaccine is given subcutaneously and the rather severe reaction that is obtained when vaccine is given intravenously. It is known that laboratory animals can be immunized by vaccine given either subcutaneously or intravenously. While I do not think that it is at all sure that those patients who recovered following this method of treatment recovered on account of it, I am still continuing to use it. Perhaps sometime there will be enough patients with sufficiently definite results to make certain whether or not it does do any good.

CLINICAL SIGNIFICANCE OF CHOREA AS A MANIFESTATION OF RHEUMATIC FEVER

A STUDY IN PROGNOSIS

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BOSTON

The occurrence of uncontrolled and purposeless movements in childhood involving primarily the extremities but affecting in severer grades voluntary muscles elsewhere, and for which there exists no demonstrable neurologic or psychologic background, is accepted as so-called Sydenham's chorea. The close association between this symptom complex, known as chorea, and rheumatic fever has been recognized for many years. Not only the frequency of choreiform movements in patients exhibiting symptoms and signs of rheumatic fever but also the high familial incidence of the two, together with the similarity in seasonal variation to be commented on later, is sufficiently striking to suggest a close interrelation between these two conditions. Furthermore, the frequent association between chorea and heart disease of the rheumatic type lends additional supporting evidence that Sydenham's chorea is probably a manifestation of rheumatic fever. Proof of this relationship, however, must await the establishment of the etiology of the two. It is our purpose in this paper to present certain data that we believe are important in an evaluation of the clinical significance and prognostic implication of this as yet imperfectly understood symptom complex, together with a consideration of the apparent discrepancies between the present study and previously published reports.

Many authors state definitely that, omitting habit spasm and purposeless movements of evident neurogenic origin, it is safe to consider choreiform movements as a part of the rheumatic syndrome. Coombs,[1] Poynton and Schlesinger,[2] and Findlay[3] have expressed this opinion. Concerning the exact rôle, however, which chorea plays as a manifestation of rheumatic fever, there has been no general agreement. The literature is voluminous and the scope of this paper such that an exhaustive review is not indicated. Only the more commonly accepted opinions will be reviewed.

An interesting comment concerning the status of chorea was written by Bouteille[4] in 1810:

> Tout est extraordinaire dans cette maladie; son nom est ridicule, ses symptômes singuliers, son caractère équivoque, sa cause inconnue, son traitement problématique.

An extensive monograph on the subject was written by Osler[5] in 1894. His review of the knowledge concerning not only chorea minor or Sydenham's chorea but also other types of choreiform movement is excellent, and his teachings are well known to students of the disease as well as to many practicing physicians. In the forty years since the publication of his treatise there has been little added to the more fundamental knowledge of this distressing condition. Osler[5] left little to the imagination concerning the importance of chorea in the development of heart disease of the rheumatic type, as is clearly shown in the following quotation:

> The extraordinary frequency with which mitral valvulitis is met with in fatal cases is remarkable. There is no known disease in which endocarditis is so constantly found, post mortem, as chorea; it is exceptional to find the heart healthy.

An abundance of clinical material to support this thesis was presented, a criticism of which will be presented later. Relatively the same opinion was also expressed recently by Swift,[6] who stated that "chorea is one of the grave manifestations of rheumatic fever in childhood."

Mackie[7] from an analysis of 393 cases of rheumatic fever and eighty-nine cases of chorea found that there was no significant difference between these two types of rheumatic infection as far as subsequent heart disease was concerned. Strong[8] reported a slightly higher incidence of rheumatic heart disease in cases of chorea than in cases of rheumatic fever. He also collected 2,359 reports of cases of chorea from the literature, in 953, or 40.3 per cent, of which rheumatic heart disease was noted. The incidence of heart disease in his own series was 45 per cent, while that for rheumatic fever was 38 per cent, a figure which may well be considered low in view of a large literature to the contrary.

A less drastic view was expressed by Coombs,[1] who found rheumatic heart disease in only 44 per cent (at the time of onset) of patients with chorea as opposed to 75 per cent in rheumatic subjects who exhibited joint pains. He further stated that, of the subjects whose first manifestation of rheumatic fever was chorea, only about 3 per cent failed to survive the first decade. But when the average duration of cases that have ended fatally is considered, figures relative to heart disease are practically the same as those for the group of patients whose condition began with rheu-

From the House of the Good Samaritan.
The expenses of this study have been defrayed by a grant from the Commonwealth Fund.
Read before the American Society for Clinical Investigation, Atlantic City, N. J., May 6, 1935.

1. Coombs, C. F.: Rheumatic Heart Disease, New York, William Wood & Co., 1924.
2. Poynton, F. J., and Schlesinger, Bernard: Recent Advances in the Study of Rheumatism, Philadelphia, P. Blakiston's Son & Co., 1931.
3. Findlay, Leonard: The Rheumatic Infection in Childhood, New York, William Wood & Co., 1932.
4. Bouteille, E. M.: Traité de la chorée ou danse de St. Guy, Paris, Vinçard, 1810.
5. Osler, William: On Chorea and Choreiform Affections, London, H. K. Lewis & Co., 1894.
6. Swift, H. F., in Cecil, R. LaF.: Text-Book of Medicine, ed. 2, Philadelphia, W. B. Saunders Company, 1931.
7. Mackie, T. T.: Rheumatic Fever: Analytical Study of 393 Cases of Rheumatic Fever and 89 Cases of Chorea, Am. J. M. Sc. **172**: 199 (Aug.) 1926.
8. Strong, G. F.: Chorea with Particular Reference to Cardiac Complications, Canad. M. A. J. **13**: 92 (Feb.) 1923.

matic fever. Coombs [1] stated that chorea usually occurs in cases of the mildest grades of rheumatic infection. As a result of an analysis of the records of 180 children with rheumatic infection, Marshall [9] expressed the opinion that in many patients with severe chorea with frequent recurrences carditis never develops, and "one sometimes wonders if this is due to a different causative agent." Findlay,[3] in a recent monograph in which he gave his observations over a period of years on 701 rheumatic children, expressed much the same opinion. He did not find rheumatic heart disease so commonly in patients with chorea (50 per cent of hospitalized patients with chorea) as in those with arthritis (75 per cent). He further stated that he had never seen a child die of chorea in whom the heart was not affected, and in those cases he blamed the myocardium for the fatal issue. In discussing the differences between the cases of rheumatic infection characterized by arthritis and those characterized by chorea (chiefly in considering the relative rarity of pericarditis and subcutaneous nodules in patients with chorea), this author expressed the opinion that "either all cases of Sydenham's chorea are not rheumatic in origin or different strains of the rheumatic virus are responsible for the two manifestations."

Such are a few of the varied opinions that have been expressed regarding the relationship between chorea and rheumatic fever. It is evident that there are differences of opinion, but there is general agreement that the relationship is more than coincidental. Hence any one observing a considerable number of instances either of rheumatic fever or of chorea will frequently encounter the other condition. The only exception to this association occurs in the older group of patients with rheumatic fever after the second decade, in whom chorea is uncommon.

At the present time one rarely observes a case of the violent chorea which gave rise to the term chorea insaniens, and the exhaustive features of the condition are not encountered as commonly as a decade or two ago. Even omitting this violent but rare form of the symptom complex, it is difficult to evaluate the rôle of chorea itself as regards its effect on the heart. In the reports in the literature there have been frequent failures to dissociate the effects of chorea alone in contrast to the effect of chorea plus other evidence of rheumatic fever in the consequent development of heart disease. The case reports cited are so brief that it is difficult to conclude whether or not chorea was an important factor in the development of the pathologic condition of the heart. As may be seen from the discussion of the literature just given, the earlier observers felt that chorea was very conducive to the development of endocarditis, especially of the mitral valve, while more recent writers tend to question the seriousness of this manifestation.

Since 1921 the House of the Good Samaritan has given long bed care to more than 1,200 subjects with various manifestations of rheumatic fever (including chorea) and it has been possible to follow the course of this large group during the subsequent years. Without discrimination, any patient having any evidence of rheumatic fever or chorea has been eligible for admission. In this respect the series observed is representative of rheumatic fever and chorea in the general region of Boston. The only limitation has been that relatively few older patients with severely damaged hearts have been admitted because of the evident poor prognosis, and there has been a preponderance of females over males (few males over 12 years), the House of the Good Samaritan having for years limited the scope of its work to the treatment of women and children.

The clinical impression of a staff of six experienced observers has been that the patients with chorea have a better prognosis than those with other manifestations of rheumatic fever. The common experience has been that many patients with chorea exhibit no evidence of rheumatic fever other than purposeless choreiform movements. Fever, elevation of the pulse rate, elevation of the white blood count and an increase in the sedimentation rate of the red blood cells have frequently been absent. It was observed that chorea could and did occur without other clinical or laboratory evidence of rheumatic fever. The appearance of other manifestations was considered indicative of generalized rheumatic fever. This idea was stressed by Finlayson [10] in 1890, who suggested that short febrile attacks during chorea are due to endocarditis. Osler [5] stated that fever is rare, save in maniacal cases, and Findlay [3] noted the absence of fever in uncomplicated cases of chorea. This author further cautioned that "fever during chorea should raise the suspicion of its rheumatic origin."

MATERIAL

The data presented in this study are the result of an analysis of 1,000 consecutive cases of rheumatic fever and chorea observed for considerable periods of time at the House of the Good Samaritan in which the patients were followed for an average period of eight years from the time of the onset of the disease. There have been numerous readmissions, and two thirds of the follow-up work has been carried out by us in cardiac clinics of the House of the Good Samaritan and the Massachusetts General Hospital. The larger part of the remaining patients have been followed by Dr. Paul W. Emerson of the Children's Hospital, to whom we are indebted for data. The information on a smaller number of cases has been obtained from the Boston City Hospital and through the courtesy of private physicians. The scope of this report deals only with that portion of the data which is pertinent to chorea. Analysis of the series as regards rheumatic fever will be presented at a later date.

There has been a decided effort to omit all cases of choreiform movement other than those of the Sydenham type. While this may be difficult in certain cases, it is our opinion that this series represents as true a group of patients with Sydenham's chorea as is possible with the present diagnostic knowledge. While it is admitted that there may be a small percentage of error, it is not sufficiently large to render the data unreliable. As seen in chart 1, the seasonal variations of the onset of chorea and of rheumatic fever in this series exhibit a comparable similarity. The use of data assembled from seasonal variations alone may be fallacious with regard to the question of etiology, but the similarity here exhibited, in addition to other data to be presented, warrants consideration of some similar factor common to the two groups. The graph shown is very similar to that published by Findlay,[3] despite the fact that the seasonal incidence of such rheumatic manifestations in

9. Marshall, Robert: Review of 180 Children Suffering from Rheumatism, Chorea and Carditis, Arch. Dis. Childhood **3**: 28 (Feb.) 1928.

10. Finlayson, James: On Obscure Febrile Attacks in the Course of Chorea, Referable to Endocarditis, Arch. Pediat. **7**: 497 (July 28) 1890.

Great Britain is different from that in the United States. The age of the patients herewith reported was largely from 8 to 16 years (although a small percentage were older). In chart 2 are given the data regarding the duration of observation following the onset of symptoms in 482 cases.

Chorea has been considered in this analysis as a single manifestation of rheumatic fever. Fever, save during periods characterized by violent choreiform movements, frequent nosebleeds, joint pains, pericarditis, subcutaneous nodules, erythema multiforme, and various laboratory evidences of infection have been considered as other manifestations of rheumatic fever. We believe that it is only after detailed studies of large groups of cases have been carried out over a considerable period of observation that the true significance of chorea as a manifestation of the generalized disease rheumatic fever can be evaluated.

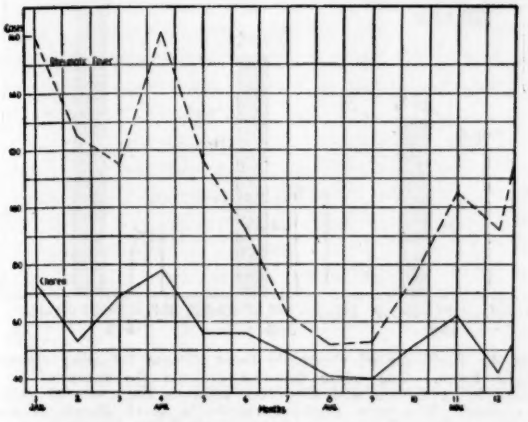

Chart 1.—The seasonal variations in the onset of chorea and of rheumatic fever, including recurrences, in 671 instances of chorea and 1,209 instances of rheumatic fever.

ANALYSIS OF DATA

As just stated, chorea has been analyzed as a single manifestation of rheumatic fever. For the purpose of this study the patients who have had chorea are grouped in three main divisions:

GROUP 1.—*Chorea:* Here are included all the patients observed over an average period of eight years who have exhibited frank choreiform movements. As may be seen from chart 3, this is a large group (482) consisting of nearly 50 per cent of the total series of 1,000 rheumatic patients. This is not surprising, since chorea is a common condition, and indeed it has been commented on by Osler,[5] Coombs,[1] Findlay[3] and others as being the most common single manifestation of rheumatic fever.

GROUP 2.—*Chorea Associated with Other Manifestations of Rheumatic Fever:* Over a period of eight years nearly three fourths (348, or 72 per cent) of all the patients with chorea at some time exhibited other manifestations of rheumatic fever. This group will be subdivided later for further consideration.

GROUP 3.—*Chorea Not Associated with Other Manifestations of Rheumatic Fever:* While it is difficult to be absolutely certain that no other manifestations of rheumatic fever occurred during an eight year period, the search has been as exhaustive as possible. A number of admissions both at the House of the Good Samaritan and elsewhere have been reviewed and in most instances frequent and detailed histories were taken. If actual low grade rheumatic fever was present at any time, we believe that it did not reach a clinical level. We are cognizant that such conditions are occasionally present and recognize the fact that rheumatic heart disease does develop in the absence of a history of rheumatic fever. In this group of slightly over one fourth (134, or 28 per cent) of the total group of patients with chorea no frank evidence of other manifestations of rheumatic fever could be elicited.

INCIDENCE OF HEART DISEASE

Some indication that chorea may not be readily associated with the development of rheumatic heart disease is obtained from chart 4. Rheumatic heart disease was found in 54 per cent of the patients with chorea (259 of 482). This figure is in general agreement with statistics found in the literature. Osler[5] found this incidence to be 51 per cent, Marshall[9] 60 per cent, Mackie[7] 51.5 per cent, Poynton[11] 50 per cent, and Findlay[3] 50 per cent. Strong[8] (45 per cent), Wallace[12] (41.5 per cent), and Abt and Levinson[13] (32 per cent) reported slightly lower figures. As previously noted, in 2,359 instances of chorea collected from the literature by Strong,[8] heart disease was present in 953, or 40.3 per cent. It is difficult to determine from the published reports the period of observation of many of these studies. Coombs[1] reported that eventually rheumatic heart disease developed in 76 per cent of his patients with chorea, but again the period of observation was not given. In our series the incidence of heart disease in a comparable sized group (518) of patients with rheumatic fever without chorea over a similar average period of eight years was 86 per cent (447 instances). The criteria for the diagnosis of rheumatic heart disease were those advocated by the American Heart Association.[14] Throughout these studies and in the accompanying charts the term potential rheumatic heart disease is used to denote the absence of clinically demonstrable heart disease in a patient who has had either rheumatic fever or chorea. This difference between 54 and 86 per cent is striking and indicates definitely a lower incidence of rheumatic heart disease when chorea is a part of the syndrome of rheumatic fever. Since the incidence of heart disease in

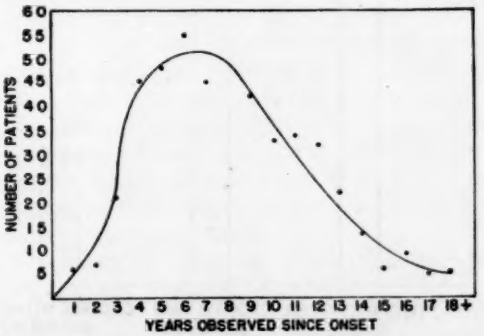

Chart 2.—Duration of period of observation from the onset of chorea or of rheumatic fever for the 482 patients with chorea. The average duration in this group was eight years.

11. Poynton, F. J: Rheumatic Infection in Childhood: Early Diagnosis and Preventive Treatment, Brit. M. J. **2**: 788 (Oct. 31) 1925. Poynton, F. J.; Paterson, Donald, and Spence, J. C.: Acute Rheumatism in Children, Lancet **2**: 1086 (Nov. 27) 1920.
12. Wallace, H. L.: Chorea: Short Study of 200 Cases, Edinburgh M. J. **40**: 417 (Sept.) 1933.
13. Abt, I. A., and Levinson, Abraham: A Study of Two Hundred and Twenty-Six Cases of Chorea, J. A. M. A. **67**: 1342 (Nov. 4) 1916.
14. Criteria for the Classification and Diagnosis of Heart Disease, New York, American Heart Association, 1929.

the patients with rheumatic fever compares favorably with that in numerous series as reported by capable observers, the percentages in both groups must be given serious consideration.

In an attempt to evaluate this seeming discrepancy between the groups of patients with chorea and those with rheumatic fever, the incidence of heart disease was determined in those with chorea who had also exhibited other manifestations of rheumatic fever. As shown in chart 4, the group consisted of 348 subjects and heart disease was found in 255, or 73 per cent, of the group. It is clear that manifestations of rheumatic fever other than chorea influence strongly the development of rheumatic heart disease. The discrepancy then in the incidence of heart disease in the patients with rheumatic fever (86 per cent) as compared with the patients with chorea (54 per cent) seems to be largely in those patients of the latter group whose only rheumatic manifestation has been chorea, instances of the so-called pure chorea. Further analysis proves this to be correct.

INFLUENCE OF CHOREA ON THE DEVELOPMENT OF RHEUMATIC HEART DISEASE

Of the 482 subjects observed to have had chorea, 318 (66 per cent) exhibited only chorea as a manifestation of rheumatic fever at the onset, an average of eight years prior to this analysis. The analysis of this group, shown in chart 5, from the point of view of the influence of chorea on the development of rheumatic heart disease further stresses the importance of manifestations of rheumatic fever other than chorea. In this group 134 (42 per cent) who exhibited only chorea as evidence of rheumatic fever at the onset were found at the end of eight years to have exhibited no other evidences of rheumatic fever. In this group there is a striking absence of rheumatic heart disease. For

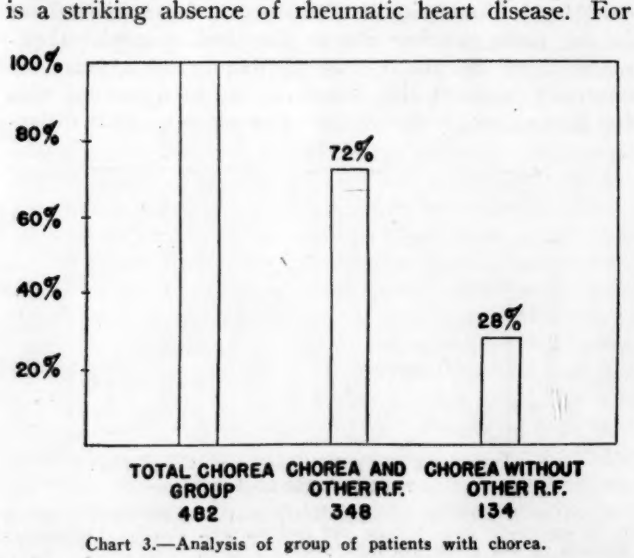

Chart 3.—Analysis of group of patients with chorea.

the sake of clarity in the subsequent discussion, and in the absence of a better term, we have designated this as the group of patients with "pure" chorea. In only four instances (3 per cent) was rheumatic heart disease found, and in view of the frequency with which one encounters heart disease of the rheumatic type in adult life without a previous history of rheumatic fever, it is surprising that the incidence here is not higher. As will be discussed later, a number of these patients had more than one attack of chorea, and despite this there remains the surprisingly small percentage with heart disease (3 per cent). Among the 184 subjects (58 per cent) in whom other manifestations of rheumatic fever developed subsequent to chorea, the incidence of rheumatic heart disease was 80 per cent (147), a figure which approximates the incidence (86 per cent) of rheumatic heart disease in the group of patients with rheumatic fever uncomplicated by chorea (chart 4). It may be well to point out that it is in this group (chorea and subsequent rheumatic fever) that one finds

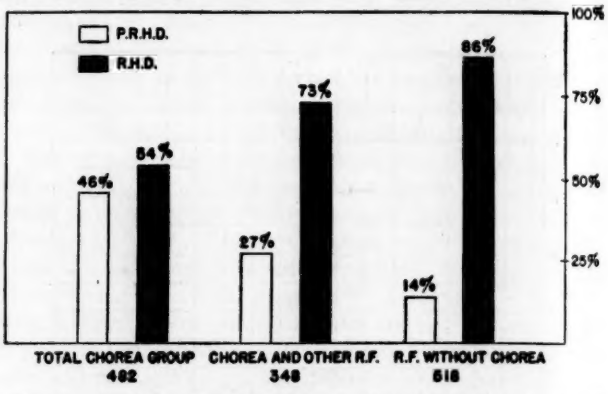

Chart 4.—Incidence of rheumatic heart disease following chorea and rheumatic fever. The white columns indicate the cases of potential rheumatic heart disease and the black columns the cases of rheumatic heart disease. The term potential rheumatic heart disease is used to denote the absence of clinically demonstrable heart disease in a patient who has had either rheumatic fever or chorea.

the severer manifestations of rheumatic fever. This suggests that when manifestations of rheumatic fever occur subsequent to chorea, the patient is very liable to follow the usual course of the subject with rheumatic fever alone.

In the remaining 164 (34 per cent) of the group of 482 patients with chorea, heart disease was found in 66 per cent (108 instances). This group represents those patients in whom chorea occurred subsequent to the onset of rheumatic fever. In other words, chorea occurring during the course of rheumatic fever is not so commonly associated with the development of rheumatic heart disease as is the case when only other manifestations of rheumatic fever are present. It seems then that chorea is more commonly found during the course of mild rather than of severe rheumatic fever. This feature will be discussed in more detail later.

Thus, as a factor in the development of rheumatic heart disease it appears that other manifestations of rheumatic fever are far more important than chorea. Uncomplicated chorea seems to play but a small part, whereas the combination of other evidences of rheumatic fever in addition to chorea results in a lesser incidence of heart disease than is found in patients with rheumatic fever uncomplicated by chorea. It is little wonder, therefore, that some observers, as previously reported, have questioned the rheumatic origin of chorea or have felt that more than one agent may be involved.

RELATION OF THE NUMBER OF ATTACKS OF CHOREA TO THE DEVELOPMENT OF RHEUMATIC HEART DISEASE

If chorea is one of the grave manifestations of rheumatic fever and definitely conducive in its own right to the development of rheumatic heart disease, one would expect the number of attacks definitely to increase the likelihood of the occurrence of rheumatic heart disease. In discussing this feature, Findlay[3] noted

that choreiform movements were not of serious prognostic importance. Marshall [9] also noted the failure of the number of attacks to influence appreciably the development of rheumatic heart disease. In table 1 may be seen the analysis of our series of cases in this regard. While the patients with clinically demonstrable heart disease show a slightly higher percentage of instances in which there was more than one attack of chorea than do the patients without heart disease, the differences are not sufficiently striking to be given serious consideration. This is especially true since it has been clearly demonstrated in this series that the other manifestations of rheumatic fever far overshadow chorea as the important factor in the development of rheumatic heart disease.

Further, an analysis of the comparative number of recurrences or recrudescences of rheumatic fever and of chorea has been made of the 348 subjects comprising the group of patients with chorea and other manifestations of rheumatic fever. This is shown in table 2. When chorea has been more frequent than other signs and symptoms of rheumatic fever, rheumatic heart disease and potential rheumatic heart disease are found with the same frequency (34 per cent as opposed to 35 per cent); when there is the same relative number of recurrences of each, the incidence of potential rheumatic heart disease is somewhat higher (41.9 per cent in contrast to 34.9 per cent). As might be expected, rheumatic heart disease is found slightly more frequently (30.9 per cent as compared with 22.5 per cent) when the recurrences of rheumatic fever outnumber those of chorea. Here again, as is true of the influence of the number of attacks of chorea on the development of rheumatic heart disease, no striking variations are noted. These results strengthen our belief that the severity of rheumatic fever is the principal factor of importance in the development of rheumatic heart disease.

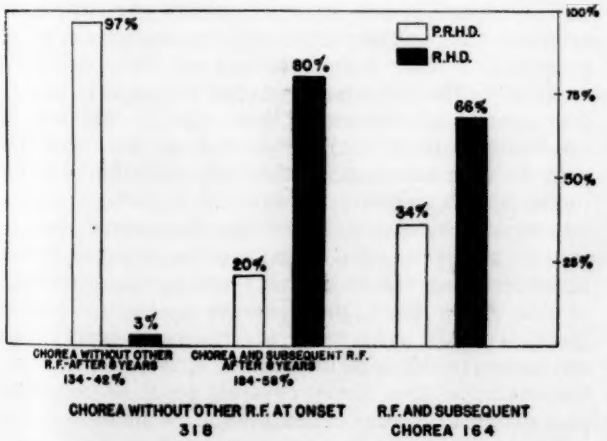

Chart 5.—The influence of chorea (with and without other manifestations of rheumatic fever) on the development of rheumatic heart disease.

COMPARISON OF FREQUENCY OF SEVERE MANIFESTATIONS OF RHEUMATIC FEVER

Little explanation is needed other than to comment on the evident variation found between the patients with rheumatic fever (518), and those with chorea and other manifestations of rheumatic fever (348), concerning the frequency of the manifestations as shown in chart 6. Precordial pain (with omission of the mild pain often found associated with an effort syndrome), congestive failure and pericarditis are manifestations of rheumatic fever that have serious prognostic importance. It is significant that these three manifestations of perhaps gravest import are found only half as often in patients with rheumatic fever who have had chorea as compared with the patients who have had rheumatic fever unassociated with chorea. This alone is sufficient to warrant the assumption that chorea is a relatively mild manifestation of rheumatic fever. Further, the greater number of these severe

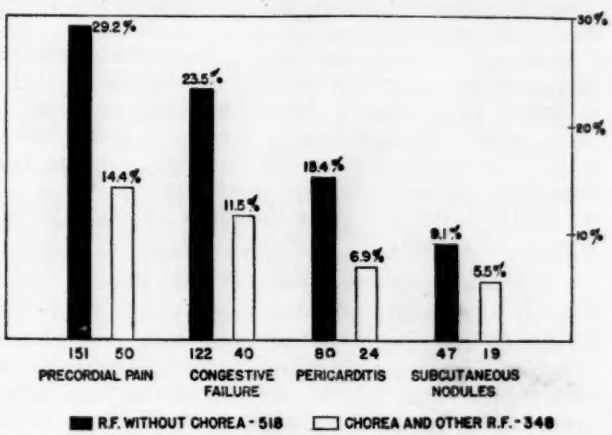

Chart 6.—Comparison of the frequency of occurrence of severe manifestations of rheumatic fever in patients with rheumatic fever without chorea (black columns) and patients with chorea and other manifestations of rheumatic fever (white columns).

manifestations of rheumatic fever are found in that group of patients having only chorea at the onset, and subsequently becoming more definite rheumatic subjects. The fact that pericarditis is rarely seen in cases of chorea was commented on by Osler.[5] More recently there has been expressed a distinct impression that the association is not uncommon. The literature has been reviewed and criticized by Findlay,[3] who failed to find this frequent association. In our experience pericarditis has rarely been associated with chorea.

Subcutaneous nodules are generally acknowledged to be a manifestation of severe rheumatic fever. While we do not agree entirely with the expressions found in the literature of the necessarily serious prognostic importance of the appearance of these nodules, it must be admitted that they usually do occur in cases of severe rheumatic fever. We have observed the appearance of nodules on rare occasions in patients without rheumatic heart disease, as has also Poynton.[11] It is not surprising then that nodules are more common in the patients with uncomplicated rheumatic fever.

The frequency of auricular fibrillation may also be cited, but it is not included in the chart. The frequent association of this arrhythmia with mitral stenosis is well known. Here again the incidence was low in the patients with chorea and rheumatic fever, being found in only sixteen patients (4.6 per cent) as opposed to forty-five patients (8.7 per cent) with rheumatic fever only.

Prolongation of the auriculoventricular conduction time as noted in electrocardiograms is commonly found during the course of rheumatic fever. It is not necessarily a severe manifestation but is usually considered to indicate the presence of active cardiac disease. The frequency with which this is found depends largely on the diligence with which it is searched for in cases of rheumatic fever. Tracings have been made (only during the past four years of observation) in much the same routine manner in the two groups. The fig-

ures, which will be cited presently, are hence comparable for the groups considered but do not express the true incidence of this abnormality in the series. It is interesting that the patients with rheumatic fever without chorea showed this abnormality twice as often (forty-three instances, 8.3 per cent) as the patients with chorea and rheumatic fever (thirteen instances, 3.7 per cent).

Since the group of 134 patients with uncomplicated chorea failed to exhibit any of these severe manifestations of rheumatic fever, this group does not appear in chart 6.

It is our opinion that these observations strongly indicate that if chorea is found in association with other evidences of rheumatic fever the rheumatic fever is likely to be mild. Conversely, in cases of general rheumatic fever without chorea the rheumatic fever is more frequently severe; and the severe manifestations of rheumatic fever are twice as likely to occur in the absence of chorea.

PROGNOSTIC SIGNIFICANCE OF CHOREA

After an average period of eight years 28 per cent (134) of the group of patients with chorea have remained free from rheumatic fever. Further, as has been shown (chart 4), 46 per cent of this total chorea group failed to exhibit clinical evidence of rheumatic heart disease. In this group the factor of importance has been demonstrated to be the presence of manifestations of rheumatic fever other than chorea (chart 5). In addition, those subjects with chorea and other manifestations of rheumatic fever have severe manifestations of rheumatic fever only half as often as the patients with rheumatic fever without chorea (chart 5). This forces us to conclude that chorea cannot be of as serious prognostic importance as other manifestations of rheumatic fever. This is also shown in chart 7, which gives the death rates of the entire group of 1,000 subjects. Under three headings the comparative percentages of fatal cases are listed. Deaths which were not in any way referable to chorea, rheumatic fever or rheumatic heart disease have been omitted.

1. In the group of patients having chorea without other evidence of rheumatic fever (134), only one death occurred as a result of rheumatic heart disease.

TABLE 1.—*Relation of the Number of Attacks of Chorea (482 Patients) to the Development of Rheumatic Heart Disease*

Number of Attacks	Rheumatic Heart Disease		Potential Rheumatic Heart Disease	
	Number of Patients	Percentage	Number of Patients	Percentage
1	113	43.6	125	56.0
2	69	26.6	60	26.9
3	38	14.7	17	7.6
4	15	5.9	12	5.4
5	11	4.2	7	3.1
6 or more	13	5.0	2	1.0
Totals	259		223	

In that patient heart disease developed without there being at any time definite evidence of rheumatic fever other than chorea. Death resulted suddenly probably from a cerebral embolus; permission to perform an autopsy could not be obtained. Three other deaths occurred (not shown in the chart, two the result of pneumonia, and the third from postpartum hemorrhage). In the three latter cases there was no evidence of rheumatic fever or rheumatic heart disease at the time of death.

2. In the group of patients with chorea and other manifestations of rheumatic fever (348) fifty (14 per cent) died of associated causes. Death resulted in forty-six cases from rheumatic fever, in three from subacute bacterial endocarditis, and in one from acute bacterial endocarditis. Four further deaths resulted from unassociated causes (one automobile accident, one by drowning, one due to pneumonia and one due to encephalitis).

TABLE 2.—*Comparison of the Number of Attacks of Rheumatic Fever and of Chorea in the Same Patient, Relative to the Development of Rheumatic Heart Disease (348 Patients)*

	Rheumatic Heart Disease		Potential Rheumatic Heart Disease	
	No. of Patients	Percentage	No. of Patients	Percentage
More attacks of chorea than of rheumatic fever	87	34.2	33	35.5
Same number of attacks	89	34.9	39	41.9
More attacks of rheumatic fever than of chorea	79	30.9	21	22.5
Totals	255		93	

3. In the group of patients with rheumatic fever (518) there were 166 deaths (32 per cent) from causes associated with the disease. The large majority of these deaths (140) resulted from rheumatic fever. In eight instances death resulted from subacute bacterial endocarditis, and in three from acute bacterial endocarditis. Six patients died suddenly of cerebral embolism, four died after the age of 40 of congestive failure without clinical evidence of active rheumatic fever, and in five the cause of death could not be definitely determined, though it was said to be due to heart disease. Seven further deaths occurred from unassociated causes and are not listed (two from automobile accidents, one following a ruptured appendix with generalized peritonitis, one of brain abscess, one at the time of cesarean section and two of pneumonia).

These death rates seem to present incontrovertible evidence that chorea per se does not indicate a serious prognosis. Other manifestations of rheumatic fever seem to be the determining factor as regards both the development of rheumatic heart disease and the ultimate prognosis. It may be pointed out here that those patients with chorea and other manifestations of rheumatic fever exhibiting the three more severe manifestations of rheumatic fever (pericarditis, congestive failure and precordial pain) are in the majority of instances dead. In no instance among the fifty deaths in this group was chorea present during the terminal illness (or last recurrence of rheumatic fever). This confirms our clinical impression that the severity of rheumatic fever is the prognostic point of importance in a group of young patients with rheumatic fever.

COMMENT

The prognostic significance of chorea as a manifestation of rheumatic fever has evidently been exaggerated in the past. We believe that the association between true Sydenham's chorea and rheumatic fever is too close to warrant a separation of this symptom complex from the syndrome of rheumatic fever. The statistics herein presented, as well as the voluminous literature, render this evident. Further, because of the various observations presented in some detail in this communication, we believe that chorea is evidence of the presence of mild rheumatic fever. In the absence

of other evidences of rheumatic fever, either by clinical signs and symptoms or by laboratory observations, chorea seems to play but a small rôle in the development of heart disease of the rheumatic type.

This point of view may seem at variance with established conceptions of chorea, but the data as presented confirm our contention. As mentioned previously, several authors have noted the fact that in patients with chorea the prognosis is better than in those with arthritis or carditis as evidence of rheumatic fever. It is generally noted, also, that rheumatic heart disease is not as commonly associated with chorea as with the other manifestations of rheumatic fever. The separation and analysis of choreiform movement, aside from other evidences of infection, have been neglected in reports in the literature, and it is usually impossible from the data presented to separate the groups as we have done in this study. It is necessary to have a large group under prolonged observation and to study them from clinical and laboratory standpoints in order to evaluate the manifestations of rheumatic fever. It is probable that, if similar criteria had been used in previously reported studies, figures comparable to ours would have been obtained.

Of the seventy-three patients cited by Osler [5] (many of the reports having been collected from the literature), thirty-nine definitely had rheumatic fever according to his criteria; ten others had fever; six pericarditis; two, infarcts, and one, nephritis. These last nineteen subjects were not considered by Osler to have had rheumatic fever, but fresh mitral valvulitis was found post mortem. On the basis of our criteria we should consider this latter group of nineteen patients as having rheumatic fever. Thus, rheumatic fever may be considered as accounting for fifty-eight rather than thirty-nine of the seventy-three deaths reported. Further cases were examples of chorea insaniens, and other cases had a fatal outcome as the result of pneumonia, peritonitis and unrelated infections. By reevaluating the data presented by Osler, it is seen that rheumatic fever and not chorea seems to be the important factor in his series also.

Chorea insaniens is not commonly encountered today and in this presentation it is not considered. One occasionally sees a patient with protracted exhaustive chorea, but on the whole even this is rare and in our experience has not been conducive to the development or progression of rheumatic heart disease in the absence of other manifestations of rheumatic fever.

We are cognizant of the fact that chorea without other manifestations of rheumatic fever may have a separate etiology. This is evident from the data presented. It is also evident that in a large group of patients exhibiting choreiform movements, other manifestations of rheumatic fever are common over a period of eight years. Gerstley and his associates [15] recently stated that "chorea should not be taken as an indication of rheumatic infection without other rheumatic manifestations." While this may be plausible, the answer to this difficult problem must remain indefinite until more knowledge concerning the etiology is available.

SUMMARY AND CONCLUSIONS

1. An analysis of the prognostic significance of chorea as a manifestation of rheumatic fever has been made in a group consisting of 482 patients with chorea. These patients have been compared with 518 patients presenting manifestations of rheumatic fever other than chorea.

2. Over an average period of eight years, 72 per cent of the patients with chorea exhibited other manifestations of rheumatic fever, while in 28 per cent only chorea was found.

3. The incidence of rheumatic heart disease in the groups of patients studied was 86 per cent in the group of patients with rheumatic fever without chorea, as compared with an incidence of 54 per cent of the patients with chorea. When the group of patients with chorea was further analyzed into (1) those with chorea and other manifestations of rheumatic fever and (2) those with chorea but no other manifestations of rheumatic fever (so-called pure chorea), the incidence of rheumatic heart disease was found to be 73 per cent and 3 per cent, respectively.

4. That the presence of chorea alone does not greatly influence the development of rheumatic heart disease is shown by the fact that, of 134 patients with chorea only, the incidence of heart disease was only 3 per cent; of 184 subjects who showed other evidence of rheumatic fever subsequent to chorea, heart disease was found in 80 per cent (147); and of 164 subjects who had chorea subsequent to rheumatic fever, heart disease was found in 66 per cent (108). Thus, manifestations of rheumatic fever other than chorea are important factors in the development of rheumatic heart disease.

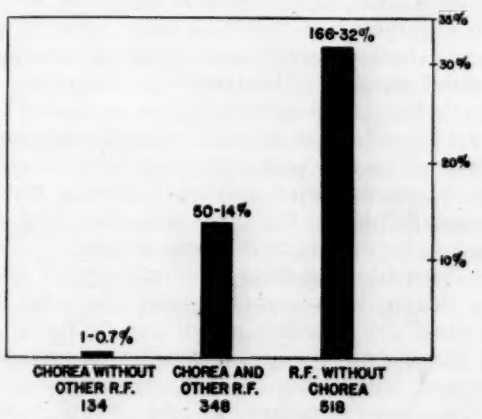

Chart 7.—Number of deaths in a series of 1,000 patients (in three groups) over an average period of eight years directly due to rheumatic fever (including chorea) and rheumatic heart disease.

5. The number of attacks of chorea does not appear to influence significantly the development of rheumatic heart disease.

6. The severe manifestations of rheumatic fever (especially precordial pain, pericarditis and congestive heart failure) occur twice as frequently in patients having rheumatic fever as in those having chorea in addition to rheumatic fever.

7. Death occurred in only 0.7 per cent of the patients with uncomplicated chorea; in 14 per cent of those with rheumatic fever and chorea, and in 32 per cent of those with rheumatic fever only. Thus, the death rate is seen to increase noticeably in the groups of patients exhibiting more evidence of rheumatic fever than chorea.

8. Therefore, chorea is considered to be a mild manifestation of rheumatic fever and one in itself not especially conducive to the development of rheumatic heart disease.

25 Binney Street.

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TETRA-ETHYL LEAD INTOXICATION AND POISONING BY RELATED COMPOUNDS OF LEAD

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Increases in recent years in the quantities of tetra-ethyl lead manufactured for use as an antidetonant, together with the now almost universal employment of this compound in ethyl and Q fluids throughout the world, has greatly enlarged the scope of the industrial hygienic problem associated with the control of the hazards accompanying its manufacture and blending into motor fuel. Since tetra-ethyl lead added to gasoline in the maximum proportion (1:1,260) now allowed by the purveyors of the compound has been demonstrated to be free from harmful effects as far as any potential hazard resulting from the lead compound is concerned,[1] the hygienic problem is limited to those men who work with the compound prior to its addition to gasoline, and to those who may be exposed to the products of decomposition formed under certain conditions, which will be described presently. In view of the fact that in several reports in the literature no differentiation has been made between actual poisonings which occurred as a result of exposure to concentrated tetra-ethyl lead and the theoretical dangers which have been assumed to be associated with lead-treated gasoline, it is well to emphasize that the cases reported in this paper, together with the accompanying symptoms, refer only to poisoning produced in the manufacture or handling of concentrated tetra-ethyl lead and its products of decomposition. Although little has been added to the symptomatology of encephalopathy due to lead poisoning since the descriptions of Tanquerel des Planches and the more recent writings of Sir Thomas Oliver in relation to exposure to the inorganic compounds of lead, the immediate connection between exposure to the volatile organic compounds and the development of characteristic acute cerebral symptoms has been so regularly observed as to justify consideration of this type of encephalopathy as a distinct clinical entity. The purpose of the present publication is to review the history of tetra-ethyl lead poisoning and its associated products of degradation and to define, on the basis of experience with seventy-eight cases, the clinical concept and the circumstances associated with its occurrence.

HISTORY

Though tetra-ethyl lead has been the subject of experiment since its discovery by Löwig[2] in 1852, no cases of poisoning due to it were reported in the literature until October 1924, some months after manufacture of the compound in commercial quantities was begun, when Eldridge[3] referred to a series of cases reported to him by Thompson and Schoenleber. A total of 138 cases were included in their series comprising forty-nine cases seen by Kehoe in Dayton, Ohio, and seventy-one in Bayway, N. J., the remainder being seen in Deepwater, N. J. There were thirteen deaths in these series. In July 1925 Kehoe[4] reported a series of nonfatal cases, describing the symptomatology and clinical features in some detail from the point of view of the differential diagnosis. Shortly afterward there appeared a report by Norris and Gettler[5] in which the results of necropsy and the chemical examination were given in four cases. These represent the first and to date the sole publications in the medical literature in which original observations have been reported. Several reports[6] in the foreign literature have been made on the subject, but all of those writers depended for their clinical information on the aforementioned reports; some of the articles have given rise to confusion, owing to the failure on the part of the reviewers to differentiate between actual poisonings that occurred as a result of exposure to concentrated tetra-ethyl lead and the theoretical dangers accompanying the use of leaded gasoline.

Reynolds[7] in 1928 reported a case in which there had been three weeks' exposure to tetra-ethyl lead at a manufacturing plant. At the time of examination the patient presented a parkinsonian syndrome with mental lethargy, which had developed gradually after the termination of the period of exposure. In the absence of complete information as to the clinical picture and the chemical observations at the time of onset, one hesitates to exclude encephalitis as a possible cause of the syndrome seen, particularly since this case would constitute an isolated instance of neurologic sequelae of tetra-ethyl lead intoxication.

PHARMACOLOGY

The study of the pharmacologic action of the organic compounds of lead, begun in 1878 by Harnack,[8] is far from complete. The occurrence of poisonings due to tetra-ethyl lead in 1924 prompted investigations by Eldridge[3] and later by Kehoe,[9] who reported the toxicity of tetra-ethyl lead to be a function of its lead content rather than a characteristic of the compound. This has been held to be true of all organic compounds of lead, although Buck and Kumro[10] found the minimal lethal dose for tetramethyl lead to be from 70 to 100 mg. per kilogram for rats when administered intraperitoneally as compared with 10 mg. per kilogram for tetra-ethyl lead and from 2 to 3 mg. per kilogram for tributyl and tripropyl lead chloride. However, the vehicle used with the trialkyl lead compounds was a dilute alcoholic solution, while the tetra-ethyl and tetramethyl lead were administered in solution in olive oil. The authors reported that the absorption was slow when the material was injected in a solution of olive oil, making it difficult to compare the results. They investigated selected ionized divalent lead compounds, slightly ionized salts, complex salts, diaryl lead salts and trialkyl and tetra-alkyl salts of lead. It was noted

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that the first three types of compounds behaved similarly in producing plumbism, and the trialkyl and tetra-alkyl salts were again similar but differed from the first three in their tendency to produce encephalopathy.

Other investigators,[11] stimulated by the hope of finding a lead compound of efficacy in the treatment of malignant tumors, have studied the toxicology and pharmacology of lead triethyl acetate, hydroxide, chloride and sulphate and numerous tetra-alkyl and diaryl salts of lead.

In general the physiologic response is similar in all animals studied, including the frog, pigeon, rat, rabbit, cat and dog, when fat soluble organic compounds of lead are used. Symptoms on the part of the central nervous system are striking and out of proportion to the manifestations by other systems, as might be expected from the oil-soluble nature of the compound. Norris and Gettler reported the recovery of volatile lead from the brains of two of four men who died as a consequence of poisoning mainly due to the vapors of tetra-ethyl lead. In addition to volatile organic lead, unusually large amounts of nonvolatile lead were found, suggesting the possibility of the decomposition of tetra-ethyl lead in situ. Kehoe[12] was unable to find any volatile lead in the brain three and twelve hours after the application of tetra-ethyl lead to the skin of rabbits, although small amounts of volatile lead were found in the blood of one and the livers of three animals. The change in composition accompanied by a loss of volatility appears to occur in a relatively short time; as for man, in two of Norris's[5] cases in which the patients died after seventy-two hours no volatile lead was found in the brains, whereas in the two men who died within twenty-four hours the brains contained significant amounts of volatile lead. The actual time required for the degradation to occur would be expected to vary with the dosage, with the mode of administration and to a certain extent with the animals. Kehoe[12] estimated the time required for the complete decomposition and redistribution in a fashion similar to that found after exposure to water-soluble, nonvolatile lead compounds to be from three to fourteen days.

The action on the central nervous system is one of irritation. In animals restlessness and irritability are marked, combativeness may be evidenced, incoordination, ataxia and twitching occur, followed in fatal cases by convulsions and death. Sensation and consciousness are not lost except just before death.

Weakness and a fall in blood pressure have been noted. Harnack[8] attributed the weakness to the action of lead on striated muscle, the circulatory change to action on the heart. He observed no effect on the smooth muscle of the vessels or intestine. Mason,[13] however, attributed the changes in the blood pressure and the respiratory rate noted by him—an initial fall in blood pressure and bradycardia with an increased respiratory rate—to stimulation of the vasodilator centers and end-organs. The locus of the action of organic lead compounds in producing the fall in blood pressure which usually follows their administration has not yet been clearly established. An increase in the respiratory rate accompanying the early stages of excitement has been noted,[9] generally followed by a slowing, particularly in the case of rabbits, although the converse is also reported.[14] Effects on the gastro-enteric tract of organic lead compounds administered parenterally are variable. Most observers, however, have noted hypermotility with a tendency to diarrhea rather than the constipation usually associated with chronic plumbism. No significant effects on the urinary tract have been noted and no experiments have been carried out to determine the possible effects on fertility. Bischoff and his associates[11] found tetra-ethyl lead to be no more toxic to pregnant than to nonpregnant rabbits, but a high mortality in the young was noted as a result of single large doses administered from the sixth to the fifteenth day of pregnancy. Though the progeny was weakened, no specific effect on the chorionic villi was observed following the administration of tetra-ethyl lead.

ETIOLOGY

While it is true that tetra-ethyl lead is not unique in its pharmacologic action or ability to produce a characteristic type of poisoning in man but shares this property with other organic compounds of lead which have similar physical and chemical properties, from a practical point of view it is the only compound of lead of its type in general commercial use today. Consequently, the present considerations will be limited to tetra-ethyl lead or to the products of its decomposition.

Tetra-ethyl lead is a colorless oily liquid (specific gravity, 1.659) with a sweetish odor. It has an appreciable vapor pressure at ordinary temperatures, 1 liter of air at usual temperatures containing 5 mg. of the material when saturated. It is insoluble in water, soluble in alcohol and acetone, and miscible with fats and oils. It is the latter property that makes available an important avenue of absorption (the skin), and the permeability of the pulmonary epithelium to the material is marked. Although the triethyl lead hydroxide and triethyl lead salts, which are the initial products of decomposition, are in the main not fat soluble, they appear to be susceptible of rapid absorption through the lungs. Considerable nasal and ocular irritation is evidenced by persons exposed even to minimal quantities of dusts of the latter compounds. Absorption from the gastro-enteric tract is variable and delayed but did occur in two cases included in this study. Vomiting and purgation were prompt.

A relatively small industrial group is potentially exposed to the hazards of the concentrated material in the form of ethyl or Q fluids. These are mixtures of tetra-ethyl lead with a halogen-containing compound such as ethylene dibromide and are in all cases colored by the addition of dyestuff to permit ready recognition of the fluid. Pure tetra-ethyl lead constitutes about 60 per cent by weight of ethyl and Q fluids. Approximately 300 to 600 men are employed in the manufacture of the fluid or in maintenance operations on the equipment in the one plant where it is now being manufactured. These men are under careful medical supervision, and exceptional precautions are taken to prevent cutaneous contact or inhalation of vapor. As a consequence, only four incipient cases with no fatalities have developed since the institution of the present

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regimen in 1925. Another group of about 1,700 men is engaged from time to time in blending the tetra-ethyl lead-containing fluids into gasolines in various refineries in the United States. This group has been under the supervision of the medical department of the Ethyl Gasoline Corporation and has shown no cases of lead poisoning. In fact, recent studies by Kehoe [15] have shown that the mean excretion of lead of these men is not significantly different from that of other men in industry not specifically exposed to lead. The latter group and in addition a variable number of employees in general refineries may at intervals of from one to two years be engaged for a few days in cleaning storage tanks that have contained gasolines to which lead has been added. While it is true that at the present time hygienic measures are in effect similar to those for the protection of the men engaged in the blending process and that there is no possibility of significant exposure provided the precautions are observed, the hazards are real and the safety of the men depends on constant vigilance. It may be expected, therefore, that exposure and illness will occur if the safety measures are improperly carried out or temporarily relaxed. After long standing in storage tanks, tetra-ethyl lead in commercial concentration in gasoline may undergo partial decomposition, with the formation of a variety of compounds, such as triethyl lead bromide or hydroxide and diethyl lead salts. These compounds are in general of low volatility but may be dispersed as fine dusts when the storage tanks are dried before being cleaned. In eleven of the cases under observation, exposure occurred during tank-cleaning operations of this sort. Aside from evidences of irritation to the eyes and upper respiratory tract during the period of exposure, there were no differences in the apparent toxicologic action or clinical behavior in those cases as compared to others in which the exposure was to pure tetra-ethyl lead, tetra-ethyl lead mixed with ethylene dibromide, and other lead compounds.

TABLE 1.—*Incidence of Lead Poisoning*

	Number of Cases	
	1925 to 1930	1930 to 1935
Manufacturing operations	61	4
Tank cleaning	0	11
Accidental ingestion	0	2
Laboratory work	0	0
Blending	0	0
Total	61	17

Another group of men of varying number who may be exposed from time to time are the chemists, laboratory workers and other investigators who prepare or handle small amounts of organic lead compounds for experimental use.

Table 1 gives the incidence of poisoning in the various groups in the period from 1925 to 1930 and since 1930. Accurate figures on the incidence of poisoning prior to 1925 are not available.

The persons affected were all white men; consequently there was little opportunity for evaluating the factors of race or sex. The condition of two Italians in this series gave no indication of increased susceptibility on the part of their race. The average age of seventy-two patients was 29 years, the oldest being 55 and the youngest 16, but no difference in reaction attributable to age was noted. Variations in the magnitude of exposure almost entirely determined the severity of the response. Alcoholism and debility may be expected to increase the likelihood of illness following a given exposure just as they influence the response to other noxious agents, but in the present group no specific susceptibility was apparent on the part of those addicted to the use of alcohol. To date, chronic intoxication resulting from exposure to tetra-ethyl lead has not been seen; consequently one can only surmise that the factors concerned with the development of plumbism from inorganic lead compounds might operate similarly in the production of chronic plumbism from the volatile organic compounds. Proper hygienic precautions and medical supervision have undoubtedly been largely responsible for the prevention of chronic plumbism, yet there is some evidence that the rate of excretion of tetra-ethyl lead is higher than that of inorganic lead compounds. Kehoe [12] found a greater proportion of the lead retained in rabbits after administration of lead chloride than after tetra-ethyl lead, indicating a greater rate of loss for the latter compound. While it is true that this higher rate would have physiologic significance only during the period preceding the decomposition of the quadrivalent compounds, it would nevertheless be of importance, as has been established for the pentavalent and trivalent compounds of antimony.

PATHOLOGIC OBSERVATIONS

Specific pathologic changes attributable to exposure to tetra-ethyl lead are not seen. Generalized visceral congestion, more marked in the brain and lungs, where it is usually associated with hemorrhage and edema, has been described in rabbits by Kehoe.[9] Those animals, as well as the dogs that were used by Eldridge,[3] showed a more marked congestion in the enteric tract with frank hemorrhage. For the most part the hemorrhages are found in the duodenum and proximal jejunum in rabbits, the lymphatic aggregation in the lower ileum being most affected in dogs. In view of the fact that hemorrhages into the gastro-enteric tract have not been seen in man, that lesion must be considered characteristic only for the animals in which it has been described. Man, like animals, shows no specific lesion at necropsy. There is, however, a characteristic distribution of the severe congestion, edema and hemorrhage. Predominant lesions occur in the white matter of the brain; the vessels are engorged, in many instances seemingly blocked by an accumulation of erythrocytes that may be definitely altered, showing loss of eosinophilic stainability. Norris [5] reported accumulations of eosinophilic material about these cellular thrombi, although scattered and partly localized degeneration of the white matter may occur without being accompanied with any cellular infiltrations or leukocytic aggregations in contiguous vessels. A second characteristic site of damage is the lung. Congestion is marked, and frank hemorrhage may occur accompanied by varying degrees of edema. Occasional hyaline thrombi are seen, with numerous accumulations of hyaline material in the interstitial stroma. Alteration of the blood occurs in some of the vessels, and accumulations of pigment-laden leukocytes are common. Changes in the bronchi are not usual. There is general visceral congestion with edema except in the liver, which, however, may show degenerative changes. Degenerations of varying degree occur in the secreting tubules of the kidney; the glomeruli participate in the general vascular engorgement. The changes in the liver and kidneys, as in the heart, pancreas, adrenals and other organs, represent a more or less uniform type of response to a

15. Kehoe, R. A.: Unpublished data.

general noxious agent and cannot be considered characteristic. In fact, it is extremely doubtful whether one would be justified in drawing any specific conclusions as to the cause of death from the necropsy in a case of tetra-ethyl lead intoxication in spite of the somewhat characteristic localization of changes in the brain and lungs. A history of exposure to concentrated fat-soluble lead compounds together with the finding of significant amounts of lead in the central nervous system and elsewhere is essential for such a diagnosis.

SYMPTOMS AND SIGNS

The process of absorption of tetra-ethyl lead is not usually accompanied with any symptoms except perhaps a degree of nausea due to the sweetish odor of the compound. Exposure to and absorption of trialkyl compounds of lead, on the other hand, are associated with a marked degree of irritation of serous and mucous membranes. In either event the onset of symptoms of intoxication is delayed somewhat, usually for from one to three hours in the case of tetra-ethyl lead, somewhat less in the case of triethyl lead salts. As is the case with many other general poisons, the interval between exposure and the onset of symptoms varies inversely with the dose; a person in whom well marked symptoms have developed within an hour after exposure may be assumed to have had a more significant exposure than another patient in whom no definite illness develops until four or even twelve hours has elapsed. This delay in onset of symptoms is the result of at least two factors: (1) the decomposition of lead within the body with the liberation of water-soluble lead compounds and (2) the delayed absorption from either the pulmonary epithelium or the skin. Delayed absorption from the enteric tract may also occur, but this is less likely to happen because of vomiting and purgation.

A prodromal period preceded the onset of severe, acute symptoms in all cases; its duration ranged from eighteen hours to eight days, varying inversely with the magnitude of the exposure and the severity of the poisoning, as did the latent period. For example, in one severe case definite symptoms of intoxication developed within an hour, progressing steadily to mania in eighteen hours. In another milder case symptoms first developed from ten to twelve hours after exposure; moderate definite symptoms were manifested for eleven days and then mania developed, this constituting the longest interval between exposure and the onset of severe symptoms seen among these patients. In this case, as in all others in which severe symptoms developed, no period of normality or significant regression of symptoms was noted prior to the onset of the severe symptoms, although slight day-to-day variation in intensity was seen.

The symptoms of the prodromal period are those of the acute stage in a less serious form. In contrast to infectious lesions, little variation in the early clinical picture is seen and focal symptoms do not develop. The stimulation of the central nervous system results in insomnia, which is uniformly present; sleep is difficult, broken and restless, and wild and terrifying dreams are constant. During the waking state, pallor and an anxious expression are usually seen; the patient is irritable and nervous and may give evidence of delusional interpretations or a depressive mood, or his state may simulate an anxiety neurosis. Mental excitement may be marked, headache is usual and often severe, and vertigo is frequent. Evidences of meningeal irritation are absent; the spinal fluid may at times be under increased pressure but is otherwise not remarkable. Changes interpreted as a result of alteration or damage to the peripheral nervous system were not observed; subjects able to cooperate in a neurologic examination were found to have a normal sensorium influenced somewhat toward an exaggerated response associated with the heightened general psychic irritability. Accompanying this there is a general increase in reflex response, the tendon and superficial reflexes being hyperactive or even exaggerated. No change in the responses of the autonomic nervous system has been noted. Reflexes not normally present were not seen. Clonus and the Babinski and Oppenheim signs were not elicited in any case. The ocular reflexes were normal. Difficulty of vision was an occasional complaint; it appeared in all cases to be due to weakness of the extrinsic muscles of the eye. The eyegrounds were not remarkable. Anorexia, nausea and vomiting or gastric disturbance were the most constant symptoms attributable to the gastro-enteric tract, tending to be most marked in the mornings. Diarrhea occurred more often than constipation, although neither disturbance was regular or frequent. A metallic taste was complained of by many. The circulatory system is profoundly affected, the pulse rate is slow, in some cases the rate being reduced to between 52 and 56, and even in those cases in which there was marked mental excitement it did not exceed a rate of 100. Both the systolic and the diastolic blood pressures are lowered, falling in some cases as low as 80 and 40, respectively. The average systolic pressure in this series was 104, the average diastolic pressure 62, representing an average depression from the normals of 20 and 16, respectively. The maximum depressions were 53 systolic and 36 diastolic.

Weakness, tremor, muscular pains and ease of fatigue were regular or frequent complaints. Weakness was in some instances so distressing as to be made the chief complaint; only two of thirty-nine patients examined did not note it specifically. It was in all cases accompanied by ease of fatigue. Tremors, which were noted in more than half the cases, were for the most part limited to the extremities, more especially the upper extremities, although there were occasional patients with labial and lingual tremors as well. Well defined tremors were coarse and jerky, of an intention type, aggravated by effort, unusual movements or attempt at control. They were not present during sleep or repose, when the activity responsible for them was manifested by twitching, choreiform or localized convulsive movements. Myotactic irritability was usually present and sometimes marked; in one patient with pronounced muscular hyperirritability to mechanical stimulation. Chvostek's sign was elicitable at a time when the blood calcium level was normal. Symptoms referable to the respiratory or the urinary system are not usual at that stage.

A subnormal temperature is a customary observation; the morning temperature is at times as low as 96 F. and the temperature remains subnormal throughout the day. On the other hand, normal temperatures or even 0.1 to 1 degree of fever have been noted in patients with pronounced mental excitement, and one patient exhibited a sudden elevation of temperature to 106 F. at a time when he appeared to be moribund. Some loss of weight is usual; beginning early it may persist for the entire course of the illness and result in losses as great as 25 pounds (11 Kg.). The average loss of weight in the series studied was 9.3 pounds (4 Kg.)

from an average weight of 157 pounds (71 Kg.). Early in the disease and in the milder cases the blood changes are not significant. In table 2 the occurrence or nonoccurrence of the foregoing symptoms is noted. The symptoms noted are interpretations of the descriptions given by patients, not responses to leading questions; consequently the regular occurrence of several lends them considerable diagnostic importance. As far as time of appearance is concerned, it is generally true that the symptoms that appear most frequently make their appearance earliest and are the most severe and persistent.

When the exposure has been slight and brief, an exposed person exhibiting the aforementioned symptoms may have a recession of symptoms after a few days and may make a complete recovery in from two to three weeks. In most cases insomnia, dreams and muscular weakness are the most persistent symptoms and the progress of the case and recovery can be gaged by their course. If a marked depression in blood pressure occurs during the course of the disease, it will usually persist, as well as the symptoms previously

TABLE 2.—*Symptoms According to the Reports of Seventy-Eight Patients*

Symptoms	Number of Patients Presenting Symptoms	Number of Patients Without Symptoms	Number of Patients with Questionable Symptoms
Insomnia	68	2	3
Mental excitement	28	1	..
Disturbing dreams	38	2	..
Ease of fatigue	40	2	..
Weakness	37	2	..
Headache	30	4	2
Muscle pains	14	2	..
Gastric disturbance	40	6	..
Dizziness	22	4	..
Anxious expression	9	2	..
Anorexia	46	14	3
Breakfast anorexia	42	13	1
Mental lethargy	13	3	1
Metallic taste	12	5	..
Tremor	22	17	2
Vomiting	21	17	1
Constipation or diarrhea	11	9	2
Incoordination	6	4	..
Impaired vision	3	9	..
Tinnitus	2	7	..

mentioned. Kehoe,[4] in his study of cases from Dayton, Ohio, many of which are included in this study, found that even in his moderately severe cases all symptoms had disappeared in from six to ten weeks.

In the more severe and acute cases following greater exposure the symptoms are present in greater number and may increase steadily in intensity. This is particularly true in the case of symptoms attributable to injury of the central nervous system, so that in the well developed severe case the mental manifestations dominate the clinical picture, completely overshadowing the changes in other systems. An exception is the occasional case in which the most marked changes are exhibited in the neuromuscular and circulatory systems. These will be described later. In the usual case several types of symptom complex can be distinguished: the delirious, manic, confused and schizophrenic. This division is essentially arbitrary and not fixed for any stage of the disease or for any individual patient; in fact, in any case there may be a fluctuation between periods of confusion and maniacal excitement or, after an episode of excitement, a period of schizophrenia may be noted accompanied with active hallucinations and delusions. In general, however, a given patient will manifest a type of mental response characteristic for him, and not related to the severity of his illness or its stage, but apparently dependent on his mental background.

The delirious type of response does not differ markedly from other toxic deliriums. The patient is greatly depressed physically and is obviously sick, tremor is marked and the mood is one of fear or apprehension, though to a lesser degree than is usual in cases of delirium tremens. The patient seems to be completely dissociated from his surroundings, his attention is poor and his response to questions is often irrelevant or erratic, influenced considerably by the amnesia for recent events, which is uniform. Terrifying dreamlike experiences are carried over; hallucinations are common, though less consistently so than in cases of alcoholic delirium. Misidentification of persons and places is usual, and disorientation is frequently complete. Episodes of acute terror may lead the patient to attempt escape; every patient must at all times be restrained and under constant supervision to keep him from leaping from a window. Despite the great mental excitation and constant exaggerated muscular activity the pulse rate is relatively slow (less than 100), the temperature is characteristically normal or subnormal and sweating is profuse. In the greater proportion of cases there was delirium of the type just described, and it persisted for from a few hours to as long as four or five days, responding well to treatment, however. Brief tonic convulsions may occur.

Patients exhibiting the manic type of response are not clearly differentiated from those having episodes of maniacal delirium. Symptoms of each type of response may be present and combined, indicating that the differentiation of type is a consequence only of relative degrees of emphasis on what are essentially mutual symptoms. However, in two of the cases the mental manifestations were sufficiently characteristic to give the impression of maniacal excitement rather than delirium. Consciousness was somewhat clouded, less so than is usual in the delirious patients, the flight of ideas was marked almost to absolute incoherence, and transitory hallucinations were strikingly in evidence. Emotional exaltation was not noted, although it might be expected to be present in cases in which such marked psychomotor activity is seen; in fact, the tendency was toward depression with great restlessness. In both cases delirious mania developed with aggravation of all symptoms, and restraint was required. The somatic symptoms were in both cases similar to those previously described.

A state of confusion may precede, follow or intervene between attacks of mania or delirium. These patients will show little evidence of psychic irritability other than insomnia, restlessness and disturbed sleep. Motor unrest, muscular twitchings and exaggerated responses may be noted in this group as in the cases just described, and occasional hallucinations and delusional interpretations are seen. The patient for the most part is apathetic or depressed and is unconscious of or indifferent to his environment. A certain degree of perplexity is usually seen, especially in reference to the immediate environment and to orientation. Lucid intervals of from a few minutes to several hours may intervene, with improvement in orientation and insight, the amnesia for recent events not being improved greatly, however. A marked sensitivity to light was observed in one case. Prior to the onset of developing delirium or mania, there is a gradual increase in the

evidences of cerebral irritation. The expression becomes more anxious, restlessness increases, insomnia is intractable and motor unrest is increased. These symptoms usually increase gradually over a period of from three to eight hours before the acute delirium supervenes, giving opportunity for intensive treatment in an attempt to abort the impending symptoms.

The schizophrenic type of response is by far the most confusing, particularly so in that in the two cases in which it appeared there was a history of behavior tending to indicate the likelihood of the occurrence of such a phenomenon without the supervention of the accident of tetra-ethyl lead intoxication. The mode of onset, initial behavior and general symptomatology did not differ in any essential from those of the other patients up to the time of the development of acute mental symptoms; there was a gradual increase in intensity of typical general symptoms over a period of from one to two weeks, culminating in fairly acute psychic disturbance. The initial symptoms in both cases simulated the episodes of catatonic excitement seen in cases of dementia praecox; psychomotor activity was increased, and the patients were impulsive, excessively talkative, noisy and destructive. There was complete sleeplessness and a marked lack of coherence with prominent hallucinations and delusions, the latter being fairly well formulated and organized. One patient was greatly depressed and fearsome with systematized self-accusatory, quasireligious delusions. His hallucinations and delusions were fairly well related to occurrences during the time of his youth. In the other patient periods of delirioid excitement alternated with definite symptomatic paranoid states accompanied by delusions of persecution and auditory hallucinations. Both patients maintained psychomotor activity and were strikingly manneristic. Coarse tremors were generalized. The facies was empty and dull. Orientation and judgment were poor. Insight was lacking. The emotional poverty and inadequate emotional response were striking. The somatic symptoms were similar to those seen in other types.

In a type of case occasionally seen—two such cases were studied—the mental symptoms are not prominent; though evidences of cerebral irritation can be elicited, the predominant symptoms are neuromuscular or neurocirculatory. Anorexia, restlessness, insomnia and dreams are present; in fact, insomnia may be so severe as to prevent sleep for days, yet the delirium or its counterpart does not develop. On the other hand the muscular weakness and ease of fatigue are pronounced and muscular pains and cramps are severe. No paralysis, anesthesia or other localized evidences of peripheral neuritis are to be seen, but the general muscle tone may be so lowered and fatigue so easily induced that work is impossible. A five minute walk may be sufficient to produce marked weakness in the legs requiring a correspondingly long period of rest. Finer movements are not interfered with and there is no true ataxia, but the rapid fatigue and muscle weakness may produce a type of poorly coordinated activity that simulates atactic movements. The tightly flexed biceps are doughy and yield to pressure, and there is moderate generalized tenderness of all muscles. The pulse rate is very slow and the temperature is definitely subnormal. The blood pressure is lowered to a point well below the average for other types. The tendon reflexes are hyperactive, no abnormal responses are noted and the sensorium is not affected.

In cases in which violent cerebral manifestations appear these may be terminated after a few hours or days and a subsequent decline in all other symptoms may occur, to be followed by an uninterrupted convalescence. The delirium may however decline in intensity to a level at which the patient requires no restraint and then, after a period of as long as two or three days, recur. It is to be noted in these cases that in the intervals between periods of delirium the improvement in the remaining symptoms, particularly the somatic symptoms, does not progress; instead the condition remains more or less stationary, with a decline prior to the recrudescence.

Clinical laboratory observations are of little diagnostic significance. A marked drop in the hemoglobin value, which occurred in one case immediately following exposure, was not maintained. The urine is in nearly all instances acid to methyl red; in addition, particularly during periods of delirium, it may contain albumin and sugar. Occasional casts may be seen. Records of but six spinal fluid examinations are available. None were remarkable in an uncomplicated case. During the delirium the pressure was slightly increased, but in two patients who were allowed to become dehydrated the pressure was subnormal. All counts and the globulin and chloride values were within normal limits. The sugar content of the spinal fluid was in two cases over 80. The gold curves in two cases were negative.

TABLE 3.—*Excretion of Lead in Fourteen Cases*

Case	Exposure	Type of Case	Interval Between Exposure and Collection of Samples	Milligrams of Lead per Liter of Urine	Milligrams of Lead per 100 Grams of Feces	Stippled Cells per 50 Fields	Recovery Completed After
C. N.	Accidental ingestion	Severe with three periods of mania; one convulsion	8 days	1.60	7.92	0	6 weeks
F. R.	Manufacture	Definite mild delirium	3 days	0.93	8.42	..	2 weeks
E. M.	Accidental ingestion	Severe; two periods of mania	15 days	0.54	9.36	0	10 weeks
L. D.	Tank cleaning	Severe; two periods of mania	16 days	0.52	4.83	..	10 weeks
J. B.	Tank cleaning	Moderately severe	16 days	0.37	0.79	..	5 weeks
J. L.	Manufacture	Mild intoxication	6-14 days	0.34	7.00	20	6 weeks
L. C.	Tank cleaning	Mild intoxication	5 days	0.34	3.15	0	1 week
B. R.	Manufacture	Mild intoxication	5 weeks	0.31	2.62	23	6 to 8 weeks
P. Z.	Tank cleaning	Severe with delirium	15 days	0.28	1.67	0	6 weeks
G. O.	Manufacture	Moderately severe	1 week	0.27	4.22	150	Complicated by chronic infection
O. N.	Tank cleaning	Mild intoxication	5 days	0.27	1.95	0	1 week
W. J.	Tank cleaning	Mild intoxication	5 days	0.24	3.36	0	1 week
T. M.	Tank cleaning	Mild intoxication	5 days	0.25	1.76	0	1 week
M. W.	Tank cleaning	Mild intoxication	5 days	0.19	1.68	0	1 week

Chemical examination of the urine, feces and blood yields evidence of a definite character in relation to the patient's exposure to lead. The rapid rate of absorption and excretion of many of the organic compounds of lead results in the appearance in the urine during the period immediately following exposure of quantities of lead materially greater than those seen at a corresponding period in plumbism from other lead compounds, and completely at variance in amount from the quantities normally excreted. Table 3 gives the results in fourteen cases of examination of the urine and feces in relation to the period following exposure.

DIAGNOSIS

The diagnosis rests on the history of a significant exposure to organic compounds of lead, the observance of symptoms and physical observations consistent with those just described, and the finding of amounts of lead in the urine and feces of the order of magnitude of those found in the cases described. (Only in certain cases have the chemical analyses of the blood and spinal fluid revealed amounts of lead that could be considered significant, but the limits of normal variation are so poorly defined at present as to make questionable any interpretations based on these results.) The interpretation of a significant exposure must depend on a knowledge of circumstances under which such exposure occurred and on the knowledge that similar exposures have been significant and have led to poisoning in other instances. A variety of conditions may offer difficulties in differentiation. Delirium tremens and toxic delirium from other causes, such as drugs, bromides, carbon monoxide and mercury, offer the greatest problem, particularly if they chance to occur in a worker who has had in addition a potential exposure to tetra-ethyl lead. Mental symptoms due to acute uremia, pellagra, the delirium of acute infectious diseases as well as those psychoses with delirium associated with organic brain disease, such as epidemic (lethargic) encephalitis, may be confusing to the examiner. Low grade infections associated with chronic ill health are often accompanied with such symptoms as hypopiesis, disturbance of sleep, anorexia and weakness. The differentiation of such a case from incipient cases of intoxication can be accomplished when an adequate history is given. In some instances in which a history cannot be obtained the diagnosis must rest entirely on the distribution and nature of the chemical observations. Most patients, however, will not present any great problem in diagnosis, particularly if one keeps in mind the limited groups of persons who may be exposed, the direct relation between exposure and illness, the continuity of symptoms and the essentially general nature of the cerebral manifestations. The coincidence of tetra-ethyl lead intoxication and other diseases has been seen. One patient having a history suggesting the possibility of developing dementia paralytica and for whom the spinal fluid showed a typical gold curve and the serologic tests were positive for syphilis had superimposed a mild intoxication. All symptoms disappeared during convalescence, antisyphilitic therapy having been instituted as soon as the acute symptoms of intoxication began to subside.

COMPLICATIONS AND SEQUELAE

In mild and moderately severe cases in which there were brief periods of delirium no complications developed. As a consequence of circulatory weakness and exhaustion in severe or fulminating cases a variety of complications may conceivably develop, such as acute cardiac dilatation, cerebral edema, pulmonary edema or similar lesions associated with terminal states. No complications occurred in the present series, however.

Sequelae have not been seen. Convalescence may be protracted with symptoms persisting as long as from eight to ten weeks, but no residual symptoms or evidences of damage have been observed. A group of fourteen patients not included in this series have been under medical observation at monthly intervals continuously since the time of intoxication in 1925 and have not given any evidence of subnormality, physical alteration or increased susceptibility to intoxication. They have been continuously at work in the manufacturing operation, the majority of them having been in supervisory positions during the past two years where the exposure is often greater than that experienced by day workmen. Such evidence, plus the absence of focal brain lesions at necropsy, indicates the reversible nature of the injury from tetra-ethyl lead and reduces the likelihood of damage from cumulative subclinical exposures.

TREATMENT

Prophylaxis consists in having the manufacture, handling and blending of these compounds carried out in closed systems. Where this is not feasible, as in laboratory operations, the use of impervious gloves and respirators is indicated. The results obtained through the exercise of precautionary measures in the manufacturing processes have been given in a recent article by Kehoe.[16]

In mild cases little symptomatic treatment is required. Termination of the exposure, light outdoor exercise and a normal diet with a high intake of water are all that is usually necessary. Small doses of pentobarbital sodium or paraldehyde will usually control the insomnia. The bowels should be kept open, preferably by the use of saline cathartics. In severe cases more vigorous treatment is indicated. Maintenance of an adequate intake of fluid is a major problem in delirious patients, the voluntary intake in such cases being nil and the losses excessive. The intravenous administration of from 500 to 1,000 cc. of physiologic solution of sodium chloride or a 5 per cent solution of dextrose in physiologic solution of sodium chloride as often as every eight hours may be necessary, and the response is usually favorable. The delirium may be controlled by the intravenous administration of from 2 to 4 Gm. of magnesium sulphate in 2 per cent solution accompanied by doses of pentobarbital sodium up to 15 grains (1 Gm.) daily by mouth. Calcium lactate and viosterol may be given to maintain an adequate intake of calcium. Saturated solution of magnesium sulphate given in from 4 to 6 ounce (120 to 180 cc.) doses as a retention enema had a noticeably quieting effect in three cases in which the patients were able to retain it. The treatment of the acute stage was essentially symptomatic and supportive, adequate calcium and phosphorus were assured and no attempts were made to facilitate the storage or to expedite the excretion of lead. Calcium chloride and gluconate, as well as sodium thiosulphate, have been administered in the usual doses intravenously without influencing the course of the disease. Light ether anesthesia was induced in two patients without apparent subsequent harm.

During convalescence the problem of deleading arises. It is generally recognized that acute infections, metabolic

16. Kehoe, R. A.; Thamann, Frederick, and Cholak, Jacob: Lead Absorption and Excretion in Certain Lead Trades, J. Indust. Hyg. 15: 306 (Sept.) 1933.

upsets or alteration in the calcium and the phosphorus metabolism [17] may profoundly affect the storage, mobilization and excretion of lead, and the dangers of attempting to expedite the excretion of lead are well known. Too little information is available, however, to justify the use of deleading procedures as a routine measure in diagnostic or therapeutic practice. Moreover, it has been shown [18] that abnormal amounts of lead are excreted naturally over a period of from twelve to eighteen months. As none of the patients in the present series manifested sequelae or delayed recurrences, attempts to promote excretion were not made.

Clinical Notes, Suggestions and New Instruments

TETANUS, TETANUS ANTITOXIN OR PHENOBARBITAL DEAFNESS

EMIL AMBERG, M.D., AND ROBERT S. HEWITT, M.D., DETROIT

C. S., a youth, aged 17 years, a patient of Dr. Glenn Stockwell, entered Harper Hospital Oct. 29, 1934. The patient had run a thorn in his right heel October 21, while hunting. For several days there had been a small localized inflammatory area at the site of the wound. About thirty-six hours before admission there was noticed some difficulty in opening the jaws. Physical examination revealed that the neck was somewhat rigid. The lower jaw was drawn back slightly and the patient was unable to open it. The abdominal muscles were very rigid, and all reflexes were extremely hyperactive. There was a definite ankle and patellar clonus. Until November 3, heavy doses of tetanus antitoxin were given. November 3 at 3 a. m. the patient became very cyanotic. Respirations were of Cheyne-Stokes type. The temperature was 103 F. November 5 there was severe urticaria over the entire body. November 6 the condition was not improved. The pulse was very rapid. The nurses were unable to count the number. Edema of the face and hands was very severe. The patient was rational at times. Apparently total deafness was first noted November 9. November 16 the patient complained of noises in both ears. The sounds were described such as those of a trolley car or of a meat grinder. The patient heard no sounds when a Bárány noise apparatus was put to either ear. The fundi were normal. There were no vestibular disturbances. The patient had continually talked in a very loud voice since the onset of the deafness. November 21 the hearing test was repeated. The patient stated that the noise was louder when a tuning fork was applied over the mastoid area than when it was applied over the forehead.

From October 29 to November 3 the patient received 120,000 units of tetanus antitoxin intraspinally, intravenously and intramuscularly in doses of 20,000 units. October 29, phenobarbital, one-half grain (0.03 Gm.), was given every three hours. October 30, phenobarbital, 1 grain (0.065 Gm.), was given every three hours when the patient was awake. November 1 the medication was the same. November 9 it was discontinued. November 3, one ampule of coramine was given. November 7, one ampule of coramine was given. November 1 and 4, sodium amytal, 3 grains (0.2 Gm.), was given. Dextrose was administered. Saline solution was administered repeatedly. November 9 a retention enema was given (chloral hydrate, 20 grains, or 1.3 Gm., and sodium bromide, 30 grains, or 2 Gm.). November 5, epinephrine was given for itching, 3 minims (0.2 cc.) when needed.

The patient came to the office March 8, 1935. Examination revealed no particular abnormality of the drum membranes. He appeared to be totally deaf. The Edelmann a-1 fork, the Dench loaded low fork and the 4,096 fork were not heard in either ear. May 21, tuning forks at 96, 128, 256, 512, 1,024, 2,048 and 4,096 vibrations were not heard in either ear, but the "toy clicker" was heard in the left ear in a distance of 7½ inches (19 cm.) and in the right ear in a distance of about 1 inch (2.5 cm.), while the noise apparatus sounded in the left ear. Politzer's acoumeter was not heard when applied to either ear. We found only collateral reference by Dr. O. Benesi of Vienna in his contribution "Neuritis toxica nervi octavi" in the Handbook of Neurology of the Ear, page 814. He mentions under "bacterial toxins": "We are oriented concerning the influence of bacterial toxins by virtue of animal experimentation. Naturally, there are scarcely any clinical observations. C. Hirsch, for instance, reports an isolated neuritis vestibularis after immunization for typhoid." Moos has described ecchymoses in the acoustic nerve in diphtheria. Our patient received numerous doses of phenobarbital. Benesi (p. 799) reports the history of a patient who had taken large doses of phenobarbital (from 4 to 5 Gm.) and became totally deaf on the right side, while he could hear the whispered voice on the left side at a distance of 3 meters. He also suffered from vertigo and fell to the right backward.

CONCLUSION

Our patient suffers from almost total deafness in consequence of either tetanus, tetanus antitoxin or, possibly, phenobarbital.

Further observations in other patients may establish a more definite etiology.

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17. Aub, J. C.; Fairhall, L. T.; Minot, A. S., and Reznikoff, Paul: Lead Poisoning, in Medicine, Baltimore, Williams & Wilkins Co., 1926, vol. 7.

18. Kehoe, R. A.; Thamann, Frederick, and Cholak, Jacob: Lead Absorption and Excretion in Relation to the Diagnosis of Lead Poisoning, J. Indust. Hyg. **15**: 320 (Sept.) 1933.

PAROXYSMAL HYPERHIDROSIS IN A DIABETIC PATIENT, WITH REMISSION UNDER AMYTAL THERAPY

EDGAR HULL, M.D., AND PAUL B. CAMERON, M.D.,
NEW ORLEANS

M. B., a Negro woman, aged 40, first came under our observation in July 1934. She was ushered rather dramatically into the diabetic clinic, staggering on the arm of the attendant. She was gasping for breath and unable to talk. Her clothing was drenched with sweat; huge beads poured from her face and neck, and from her dependent fingers drops fell with regular frequency, forming a pool on the floor. She had been sitting quietly on the bench awaiting her turn to be seen when this attack occurred. Since we believed this to be an insulin reaction, she was immediately given orange juice, and in a few minutes she was herself again, except for the drenched clothing. We were amazed to learn that she had taken no insulin and to find that these attacks had recurred at intervals of approximately two hours for the past nine years, day and night. The nocturnal attacks would awaken the patient from a sound sleep, and they necessitated changing the bedclothing.

Her past history revealed that she had had a normal childhood and adolescence. She married in 1910 and a normal child was born the same year; there had been no miscarriages. In 1914 she had what was apparently hydrarthrosis of the knees, with spontaneous subsidence, and later that year jaundice for a few weeks. In 1915 a pelvic operation was performed, ostensibly a unilateral salpingo-oophorectomy, and in 1921 it was necessary to repair a hernia at the site of the operation. In 1925 the sweats began, occurring every two hours, but in a mild form. Since then the severity had increased. In 1926 a physician, consulted for the relief of pruritus vulvae, found glycosuria and instituted a regimen. This was apparently not followed, as in 1928 she was brought to this hospital in diabetic coma. An irritative vulvitis found at this time was incorrectly diagnosed syphilitic condyloma, as it disappeared with control of the diabetes. Casual mention was made in this and subsequent histories of the paroxysmal sweats, but no investigation was made.

The family history was without significance.

After close observation in the hospital for several weeks, all her statements were verified. The sweats recurred with

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regularity every ninety to 120 minutes, throughout the twenty-four hours. Emotional upsets appeared to shorten the intersweating period. Reading for more than a few minutes caused an interval of, roughly, ninety minutes but the disturbance at visiting time in the ward had no effect. A definite premonition or aura preceded the actual diaphoresis by two or three minutes, and the height of sweating was marked by a feeling of faintness, thoracic oppression, palpitation and dyspnea, and disappeared on cessation of the attack, leaving weakness and lethargy for ten or fifteen minutes longer. Actual sweating lasted about ten minutes on the average.

Weighing the patient before and after sweats, as well as weighing bedclothing before and after, indicated a weight loss of from 180 to 300 Gm. during the paroxysm.

The blood pressure varied from 90 systolic, 70 diastolic and thereabouts, without change during the attacks.

The temperature taken over several hours at ten minute intervals, during which more than one sweat occurred, showed no fluctuation at all. The patient's temperature varied from 97 to 98 F. and did not vary during the cycle.

The basal metabolism readings have been 0 and —3 per cent. A roentgenogram of the skull shows a slight erosion of the sella, which has remained constant for the past year. The fundi and visual fields are normal.

Analysis of the sweat showed not more than 3 mg. of dextrose per hundred cubic centimeters, 351 mg. of chlorides, 3.87 mg. of ammonia and 21.5 mg. of urea nitrogen.

Results of the examination of the blood are given in the accompanying table.

Blood Analysis

Blood	Nonprotein Nitrogen	Urea	Sugar	Chlorides
30 minutes before sweat....	37	16.8	200	468
At beginning.....	38	17.4	235	435
At height.....	39	18.2	246	436
At end.....	38	17.2	240	447
30 minutes after sweat.....	35	17.2	240	454
One hour after.....	..	....	235	462

It is seen that all constituents of the blood tested remained practically unchanged with the exception of the sugar. The patient had a high threshold, and several times glycosuria was noted immediately following the paroxysm. At times the sugar has risen more than 60 points.

The diabetes is becoming more and more severe. On the admissions in 1928 and 1930 it was possible to keep the patient sugar free and with a normal or nearly normal blood sugar, with 20 units daily, on a low carbohydrate diet. At the present time, on a diet of 150 Gm. of carbohydrate, 60 Gm. of protein and 80 Gm. of fat, she maintains her weight and shows traces of sugar on 70 units daily, but shows persistently high sugar, from 200 to 240 mg.

All manner of drugs were tried, with little or no effect. At the suggestion of Dr. Wilder of the Mayo Clinic, who had seen a similar case at Rochester, Minn.,[1] sodium amytal was given, with startling results. This drug, in doses of from 3 to 6 grains (0.2 to 0.4 Gm.) nightly, enabled her to sleep through the night, and although sweats took place she was unaware of them. She has been discharged from the hospital and observed carefully at frequent intervals. At the present time she takes 3 grains morning and night. Sweating occurs, but the amount of sweat has diminished markedly and is scarcely enough to dampen a handkerchief. Whereas formerly she had to sit down during an attack and was rendered gasping and speechless, now she is able to carry on a conversation and vows she experiences no subjective symptoms. The attacks are becoming less and less severe, and the patient feels confident of ultimate recovery. Cessation of the drug causes the attacks to recur with their former severity. Curiously enough, the patient states that she does not feel sleepy, even when taking from 12 to 15 grains (0.8 to 1 Gm.) daily.

1. Hines, E. A., and Bannick, E. G.: Intermittent Hypothermia with Disabling Hyperhidrosis, Proc. Staff Meet., Mayo Clin. **9**: 705 (Nov. 21) 1934.

SUMMARY

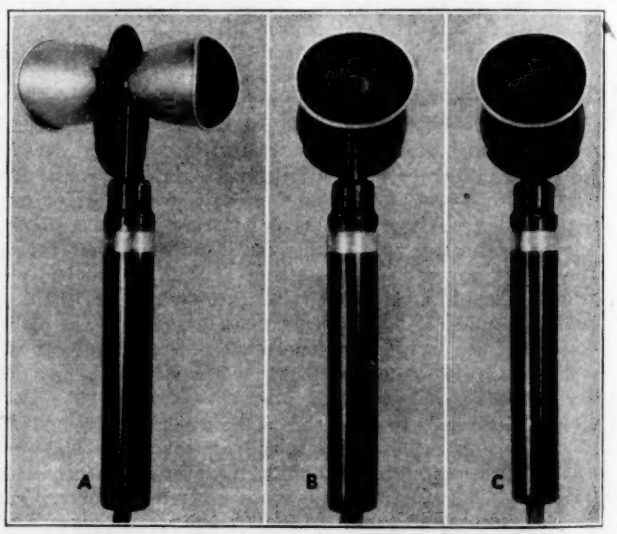
We have no explanation to offer for this case of paroxysmal hyperhidrosis in a diabetic patient. The first diagnosis of hysteria seems to be disproved, in spite of the strong emotional influence on frequency and severity, as shown by reading, or by the appearance of off-schedule attacks during staff ward rounds or amphitheater demonstration of the patient. Other conditions considered have been so-called epileptic equivalents, low-grade encephalitis, syphilis, because of the somewhat suggestive past history, and intracranial tumor, because of the eroded sella. None of these seem disproved, and very little definite evidence has been brought out in favor of them. Many of the objective and subjective phenomena occur with overdosage of epinephrine, and a disturbance of the sugar metabolism during the attacks favors the hypothesis of derangement of the epinephrine balance, the exact nature of which we are not in a position to state.

We have been able to find one similar case,[1] with remission under amytal. Our patient does not show the subnormal temperature described in the Rochester case.

A MINIATURE DARK ROOM DEVICE FOR OPHTHALMOSCOPES

CHARLES POSNER, M.D., PASADENA, CALIF.

Every physician who makes a practice of including a retinal study in the general physical examination of his patient has probably, like myself, been troubled by the necessity of converting the patient's room into a dark room for a satisfactory study of the eyegrounds. In order to overcome this difficulty it occurred to me that I could convert my ophthalmoscope into a miniature dark room. This was accomplished, as shown in the illustration, by attaching an aluminum eyecup to both sides of the revolving lens system of the instrument. The inside of



A, side view, *B*, front view and *C*, rear view of miniature dark room.

the cups was painted with a dull finish black paint, which absorbs the side reflections from the wheat grain bulb, so that there is less reflected light to dazzle the eye of both the patient and the examiner. Furthermore, extraneous light is cut off when the eyecups are applied to the eyes of both the examiner and the patient. In order to reduce further side emanations of light from the wheat bulb, I found it a good plan also to coat the sides of the bulb lens with dull finish black paint.

The device described was arranged as illustrated on my Welsch Allen ophthalmoscope, which is of the direct illuminating type. With a little practice one can easily adjust oneself to the new arrangement. I hope that this idea will be of benefit to those physicians who wish to improve their eye examinations in the patient's home.

871 East Washington Street.

Special Articles

TREATMENT OF DIABETIC COMA

CLINICAL LECTURE AT ATLANTIC CITY SESSION

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Diabetic coma presents a major medical emergency. Like any major emergency it must be dealt with promptly, efficiently and adequately. These are the three cardinal axioms if life is to be saved.

The first clinical description of diabetic coma was given by Stosch in 1828, referred to by Warburg.[1] A German, von Dusch, and a Scotsman named Marsh described it again in 1854.

Coma is not merely the result of intoxication with ketone bodies, but other thus far unknown acids are liberated in the blood and the urine in coma. Their identification will eventually throw a great deal of light on the problem. Clinical observations and, as Allen and Wishart have shown in their extensive studies on dogs, experimental evidence indicate that this fatal disorder is due rather to some metabolic derangement of which the chemical manifestations are only a superficial and variable expression.

The picture of a patient in coma is that of a very sick person which even a layman can appreciate. There is unconsciousness, labored breathing, a dry, parched mouth and a tongue covered with dry, encrusting débris, which is often discolored. One appreciates that the body is markedly dehydrated. There may or may not be vomiting. The odor of acetone can be detected on the breath; the cheeks are usually flushed, although pallor in the early stage is often present. The pulse rate is rapid and the blood pressure low.

Such then is the picture which the patient presents. Fortunately it is a picture that is easily recognizable but one must be on guard concerning the diagnosis. The points that are helpful in establishing the diagnosis are as follows:

1. A history of diabetes, the type of onset of coma and the presence of infection. Coma, however, may be the first clue that the patient is diabetic.
2. Glycosuria, ketonuria and an odor of acetone on the breath.
3. High blood sugar and low carbon dioxide determinations.

These three points practically cover the field. A diabetic patient usually drifts into coma slowly over a period of two or three days, although there may be exceptions, especially if infection is present. As acidosis develops it is easy for him to forget about the necessity of taking insulin, since his mental faculties are dulled and his family often know little or nothing about his condition.

TABLE 1.—*Differential Diagnosis of Coma*

	Eyes	Breathing	Glycosuria	Blood Urea Content	Blood Sugar Content	Onset	Headache	Acetone	Carbon Dioxide-Combining Power	Comment
Diabetic coma	Soft eyeballs	Kussmaul	Marked	Normal or high	Normal or high	Rapid or gradual	Present	Present in breath, urine and blood	Low	Low blood pressure, vomiting often present
Nephritic coma (uremia)	Pupils usually dilated; albuminuric retinitis; edema	Stertorous	Usually present but may be absent	High	Normal or slight rise	Gradual	Present	Present in breath, urine and blood	Normal	Pressure on lumbar puncture but clear fluid; high blood pressure
Cerebral hemorrhage	Pupils dilated and unequal; conjugate deviation	Stertorous and slow; spluttering relaxed and foam-covered lips	Usually present but may be absent	Normal	Normal or slight rise	Rapid	Present	.....	Normal	Unequal resistance of limbs on lifting; high blood pressure
Fracture of skull	Early dilatation of pupils	.....	May be present	Normal	Normal or slight rise	Rapid	Present	.....	Normal	Roentgen examination of skull will establish diagnosis
Brain tumor	Choked disk; changes in visual fields	Normal	None	Normal	Normal or slight rise	Slow	Persistent or paroxysmal; often violent	.....	Normal	Apathy; projectile vomiting at its maximum in a. m.
Meningitis	Pupillary changes; dilated or unequal pupils	Rapid	Present	Normal	Normal or slight rise	Sudden	Present	.....	Normal	Koenig sign; lumbar puncture; leukocytosis; fever
Insulin reaction	No changes in eyes	Normal	Absent after second catheterization	Normal	Low, though a high figure may be encountered	Sudden	None	May be present	Normal	

One should bear the following conditions in mind in making a differential diagnosis: hypoglycemia, acute infections in nondiabetic children, meningitis, uremia, brain tumor, thrombosis and embolism (table 1).

If one tries to visualize the physiologic upset that accompanies a state of coma, the treatment is easy and obvious. Three primary factors must be dealt with (table 2):

1. The diabetic complex of hyperglycemia, an excess of ketone bodies circulating in the blood stream and damaging the organism, and a low alkali reserve. The administration of insulin rectifies these three abnormalities.

2. The tissues are depleted of water because of the increased excretion of water due to the high blood sugar content. The body tries, so to speak, to wash out the excess sugar from its tissues, and water unfortunately goes with the sugar, leaving the body in a sad state of dehydration. This in turn means a reduced blood volume and low blood pressure. The blood is concentrated and shows a high red cell count and high hemoglobin value. The blood urea content is high prob-

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1. Warburg, E.: Diabetic Coma with Uremia, Hospitalstid. **67**: 841-864, 1924.

ably for the same reason and because of the deranged metabolism, and the blood chloride value is low. It is obvious what will rectify this part of the picture—an abundance of fluid and salt given by hypodermoclysis or intravenously.

3. The tissues are unable to utilize carbohydrates adequately because of a lack of insulin, a lack of water and poisoning by ketones. All three of these conditions exhaust the reserves of energy. Insulin, fluids and alkalis administered in small quantities will rectify these abnormalities.

TABLE 2.—*Diabetic Coma*

1. Diabetic complex	
Hyperglycemia	Rectified by insulin
Excess of ketone bodies	Rectified by insulin
Low alkali reserve	Rectified by insulin
2. Dehydration complex	
Tissues depleted of water	Rectified by abundance of fluids, hypodermoclysis or intravenously
Low blood volume and pressure	Rectified by abundance of fluids, hypodermoclysis or intravenously
Concentrated blood	Rectified by abundance of fluids, hypodermoclysis or intravenously
(*a*) High hemoglobin value and erythrocyte count	Rectified by abundance of fluids, hypodermoclysis or intravenously
(*b*) High blood urea value	Rectified by abundance of fluids, hypodermoclysis or intravenously
(*c*) Low blood chloride value	Rectified by abundance of fluids, hypodermoclysis or intravenously
3. Tissue starvation (all these factors exhaust the energy reserve)	
Inability to utilize carbohydrates due to	Rectified by insulin, fluids and alkalis in small quantities
(*a*) Lack of water in tissues	Rectified by insulin, fluids and alkalis in small quantities
(*b*) Lack of insulin	Rectified by insulin, fluids and alkalis in small quantities
(*c*) Poisoning by ketosis	Rectified by insulin, fluids and alkalis in small quantities

The causes of coma most frequently encountered are inadequate treatment, omission of insulin, infection, neglected diet or dietary indiscretion, hyperthyroidism, a simple operation and nervous shock.

ROUTINE TREATMENT OF COMA

The rational treatment of diabetic coma depends on two main aids: (1) insulin and (2) fluids. To these can be added other accessory items—dextrose, alkalis, fruit juices and general care.

How rapidly should insulin be administered? No definite rule can be established in this regard, as each patient presents a unique problem. While one patient may require as little as 25 units of insulin, another may need as much as 1,200 units during the first twenty-four hours. There is more danger of using too little than too much insulin. I usually start with 40 or 50 units given intravenously and follow this with 20 units every half hour until the blood sugar level reaches about 250 mg. per hundred cubic centimeters of blood. From then on, insulin is given every hour or two in the same dosage. If dextrose or physiologic solution of sodium chloride is given, the insulin is incorporated in the solution.

As I look over my charts on cases of coma I see that such a rapid and continuous dosage of insulin brings results in from six to ten hours. A slower administration of insulin with intervening periods of several hours takes longer to bring the patient out of coma, and I think that it weakens him. Chart 1 gives data recorded during a period of coma in a girl aged 2 years. The initial blood sugar value was 500 mg. and the carbon dioxide-combining power 13 cc. per hundred cubic centimeters. I gave at first but 5 units of insulin every half hour, as this was my first case of coma in an infant, increasing this later to 10 units every half hour. A total dosage of 125 units of insulin was given before the child came out of coma, which lasted for nine hours. In contrast to this is shown chart 2, which represents the data in a case of coma in a woman 45 years old. The initial blood sugar value was 894 mg. and the carbon dioxide-combining power was 10.9 cc. This patient received 650 units of insulin in the course of twelve hours together with three doses of a 10 per cent solution of dextrose intravenously before the coma was under control.

The total amount of insulin administered to the grown person seems large in contrast, but if the dosage per hour per pound of body weight in the child and in the adult is computed it is found to be 0.5 unit in the child and 0.3 unit in the adult. Such a comparison, however, will not hold in all cases, for an obese person would naturally show a low ratio of insulin with a dosage of 650 units.

The treatment of diabetic coma is simple when one has free access to a laboratory and can ascertain the patient's condition from hour to hour. One should be able to work fast and with precision. But how about the care of the patient in coma who is at home where none of these facilities exist? That often is the case. I can best answer this question by citing a parallel problem: What should the physician do out in the country if he is confronted with an acute case of appendicitis and has insufficient instruments with him? Should he perform an emergency operation or put an icebag on the patient's abdomen and take him to a hospital where adequate facilities are available? There is no question about the answer, for medical men have been trained for surgical emergencies and they are being trained for the emergency of diabetic coma. The comatose patient should be given from 20 to 40 units of insulin hypodermically and sent to a hospital where he can obtain adequate help. The preliminary dose of insulin is to the patient in coma what the icebag is to the patient with acute appendicitis—it slows up the disease process and gives the patient a chance.

TABLE 3.—*Changes in the Blood Sugar Content After the Intravenous Administration of Dextrose in Fifty-Four Cases of Diabetes*

Case	Changes in Blood Sugar Content, Mg. per Hour: Fall	No Change	Rise	Case	Changes in Blood Sugar Content, Mg. per Hour: Fall	No Change	Rise
1	22	..	..	28	..	..	22
2	24	..	..	29	..	..	14
3	60	..	..	30	28	..	..
4	33	..	..	31	25	..	..
5	19	..	..	32	11	..	..
6	38	..	..	33	10	..	..
7	28	..	..	34	8	..	..
8	34	..	..	35	14	..	..
9	10	..	..	36	208	..	..
10	26	..	..	37	6	..	..
11	47	..	..	38	3	..	..
12	..	..	38	39	..	..	5
13	..	..	18	40	4	..	..
14	39	..	..	41	4	..	..
15	58	..	..	42	9	..	..
16	24	..	..	43	18	..	..
17	18	..	..	44	22	..	..
18	..	0	..	45	..	..	0.3
19	..	0	..	46	38	..	..
20	28	..	..	47	50	..	..
21	34	..	..	48	24	..	..
22	10	..	..	49	16	..	..
23	26	..	..	50	22	..	..
24	47	..	..	51	28	..	..
25	..	..	38	52	61	..	..
26	..	..	20	53	33	..	..
27	1.8	..	..	54	19	..	..
					1,287.8	2	155.3

Of the fifty-four patients 81.5 per cent showed a fall in the blood sugar content, 3.7 per cent showed no change, 14.8 per cent showed a rise. The average fall in the blood sugar content was 29 mg. per hour, the average rise was 19 mg. per hour

The importance of fluids is equal to that of insulin. A body that is dehydrated must have the 10 to 20 per cent loss of water replenished if the individual cells are to work efficiently. A motor will not operate on

gasoline alone; oil and water are also essential. Fluids are supplied to the diabetic patient by means of physiologic solution of sodium chloride given by hypodermoclysis, intravenously and later orally. A good way to supply a portion of the fluids is at the end of gastric lavage, after the washings come clear, to leave from 300 to 400 cc. of water in the stomach. I use slightly alkalinized water, quite warm, for this purpose. The question of the use of alkalis has its supporters [2] as well as its antagonists.[3] I think that the main argument is against the excessive use of alkalis, as it is apt to upset the stomach and also it often brings on edema. Murdfield [4] even reported a case of rupture of the stomach following the use of sodium bicarbonate.

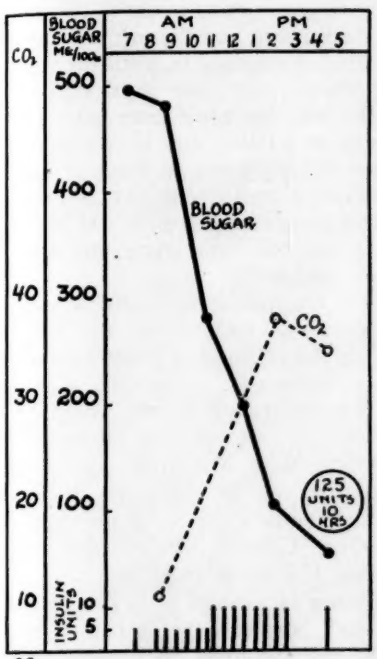

Chart 1.—Record of a case of diabetic coma in a girl aged 2 years.

Another way in which a patient can receive a portion of the fluids is by the intravenous administration of a 10 per cent solution of dextrose made up in physiologic solution of sodium chloride. I use this frequently, though not always, and my impression has always been that these patients have improved faster. One can readily see that a patient in coma, who has gone through acidosis into coma, has not had any food for from one to three days. He needs food and liquids. The liver is glycogen poor or glycogen free and it needs replenishment. It is true that the blood sugar value is high and therefore there should be no need to crowd in more sugar. However, the height of the blood sugar level is but one link in the entire chain. If the patient is given 250 cc. of a 10 per cent solution of dextrose he receives 25 Gm. of dextrose. Normally 12 units of insulin should take care of this, but I give from 30 to 50 units of insulin in this solution. This means that a hotter carbohydrate flame is created which helps to consume the ketones that are damaging the body, and the increased volume of liquid helps to wash out the rest through the kidneys. A normal animal can rebuild its glycogen reserves from added dextrose and burn the fatty acids, and a patient in coma also will if given dextrose, water and insulin. That there is no appreciable rise in the blood sugar content following the administration of dextrose (in fact most of the time there is an appreciable fall in the blood sugar value), I [5] have shown in previous publications and I am reproducing the figures here in table 3. There has always been a fear of causing a rise in the blood sugar level in the diabetic patient, but in reality a rise does not occur. I learned to appreciate the value of the intravenous administration of dextrose to nondiabetic patients during the war when I used it extensively in cases of pneumonia [6] and other conditions, and when years later I was confronted with cases of diabetic coma I applied the same measures with equal success.

The use of intravenous injections of dextrose has many advocates.[7] As much as from 100 to 200 Gm. of dextrose can be administered in this manner so that when it burns up it can create an antiketogenic action. In this manner the incomplete combustion of fatty acids is reduced to a minimum and the production of ketone is thus limited and the combustion of ketones already present in the blood and the tissues is aided. The answer which Petrén [2] gave to this question of the intravenous administration of dextrose was that of thirty-eight patients in coma to whom he gave dextrose thirty-seven recovered.

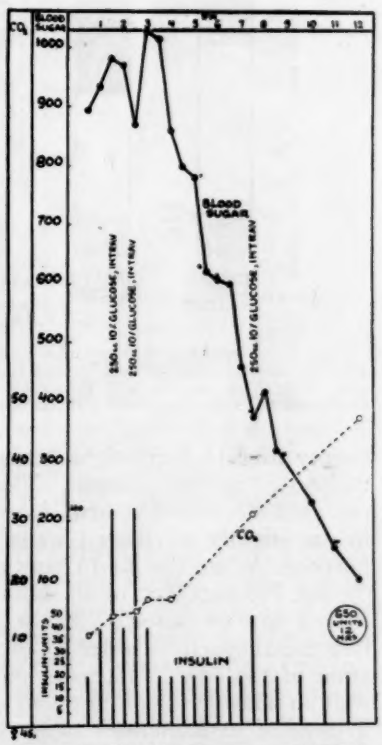

Chart 2.—Record of a case of diabetic coma in a woman aged 45.

If a patient has been vomiting he has lost a great amount of chlorides in this manner and the supply therefore needs replenishment. Physiologic solution of sodium chloride will take care of this either when given by hypodermoclysis or intravenously as dextrose in physiologic solution of sodium chloride. While the ketones can be eliminated by the use of dextrose, insulin and water, still a relative alka-

2. Petrén, Karl: Glukose oder nicht bei Behandlung von Koma diabeticum? Acta med. Scandinav., 1926, supp. 16, p. 455. Allan, F. N.: Diabetic Acidosis and Coma, M. Clin. North America **16:** 1277-1287 (May) 1931. Campbell, W. R.: Acidosis, Coma and Infections in Diabetes Mellitus, Internat. Clin. **4:** 3, 1926. Lawrence, R. D.: The Treatment of Desperate Cases of Diabetic Coma, Brit. M. J. **1:** 690 (April 12) 1930. Bowen, B. D., and Hekimian, Ivan: Diabetic Coma: A Report of Eighty-One Instances, Ann. Int. Med. **3:** 1104-1111 (May) 1930. Hartmann, A. F., and Darrow, D. C.: Chemical Changes Occurring in the Body as a Result of Certain Diseases, J. Clin. Investigation **6:** 257-276 (Oct.) 1928. Coburn, A. F.: Diabetic Ketosis and Functional Renal Insufficiency, Am. J. M. Sc. **180:** 178 (Aug.) 1930. John, H. J.: Diabetic Coma, J. A. M. A. **93:** 425-430 (Aug. 10) 1929.

3. Joslin, E. P.: The Treatment of Diabetes Mellitus, Philadelphia, Lea & Febiger, 1928. Lemann, I. I.: Futility of Alkali Treatment in Diabetic Coma, Am. J. M. Sc. **180:** 266 (Aug.) 1930. Adams, S. F.: Complications of Diabetes, Proc. Staff Meet., Mayo Clin. **4:** 192-193 (June 19) 1929. Brown, F. A.: The Management of Diabetic Coma, West Virginia M. J. **27:** 350 (Aug.) 1931. Lorant, J. S., and Froehlich, E.: Effect of Intravenous Injections of Dextrose on Ketonuria in Diabetes Mellitus and Coma, Klin. Wchnschr. **9:** 213 (Feb. 1) 1930. Bishop, L. F., and Applebaum, E.: A Coma Routine, New York State J. Med. **25:** 1382 (Nov. 15) 1929.

4. Murdfield, P.: Acute Rupture of the Stomach After Ingestion of Sodium Bicarbonate, Klin. Wchnschr. **5:** 1613 (Aug. 27) 1926.

5. John, H. J.: The Use of Intravenous Glucose in Diabetic Patients, Surg., Gynec. & Obst. **50:** 769-773 (April) 1930.

6. John, H. J.: Glucose as an Adjunct Measure in the Therapy of Pneumonia, Am. J. M. Sc. **160:** 542 (Oct.) 1920.

7. Lande, Herman: The Uncontrollable Causes of Death in Diabetic Coma, J. A. M. A. **101:** 9-14 (July 1) 1933. Foster, N. B.: Diabetic Coma, ibid. **84:** 719-722 (March 7) 1925. Elias, H.: Das Koma diabeticum, Wien. klin. Wchnschr. (supp. 27) **39:** 1, 1926. Hartmann, A. F.: Pathogenesis and Treatment of Acidosis and Alkalosis, South. M. J. **22:** 517-521 (June) 1929. Parsons, J. P.: Acetonemia—Acidosis—Alkalosis, J. Michigan M. Soc. **22:** 383 (Sept.) 1923. Schiassi, F.: Coma from Interruption of Insulin Treatment, Riforma med. **41:** 990 (Oct. 19) 1925. Petrén.[2] Campbell.[2] John.[5] Lemann.[3] Brown.[3] Bowen.[2] Coburn.[2]

losis is created, as indicated in chart 3, which was constructed after that of Hartmann and Darrow. From this it is clear that the administration of physiologic solution of sodium chloride is important in order to reestablish a normal physiologic equilibrium.

Having discussed the two main aids in the treatment of diabetic coma, insulin and fluids, which are of primary importance, I shall next consider the following accessory items, which are also of great importance:

1. Absolute rest with plenty of warmth to the body.
2. Gastric lavage.
3. Cleansing of the intestinal tract.
4. Adequate nursing and medical care.
5. Support of the circulation.
6. Nourishment; citrus fruits.
7. Alkalis.

The absolute rest is automatically taken care of because the patient is unconscious. The saving of energy to the body by the use of plenty of warmed blankets next to the body and hot water bottles so as to prevent any unnecessary dissipation of heat means much to the patient.

The clearing out of the stomach of undigested food is of importance, for food which the patient ate from

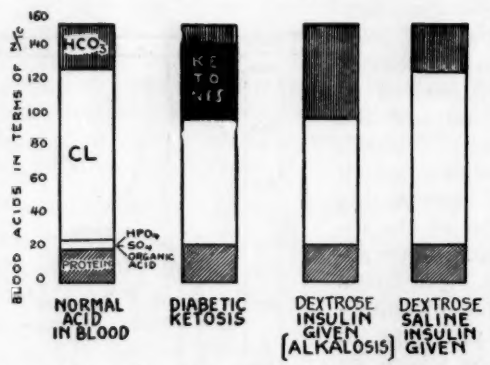

Chart 3.—A schematic representation of diabetic ketosis and the changes after the administration of dextrose and insulin and after the administration of dextrose, insulin and physiologic solution of sodium chloride (reconstructed after Hartmann and Darrow).

twenty-four to forty-eight hours previously often lies undigested in the stomach. This must all be washed out until clear fluid returns from the lavage. It is well to use slightly alkalinized water, quite warm, for this purpose. When the fluid comes clear it is well to leave the last 300 to 600 cc. of alkalinized fluid in the stomach. Also a dose of castor oil can be given through the tube into the stomach in order to ensure a complete evacuation of the bowel. If castor oil is used, one can well wait an hour or so before giving an enema. This makes it possible to administer dextrose by hypodermoclysis or intravenously without loss of time. If no cathartic has been used, then a saline enema is given as soon as possible.

Washing out of the stomach is an important procedure. I know of one death that occurred because this was overlooked. The patient was brought out of the coma chemically so that the blood sugar value and the carbon dioxide-combining power were normal, but suddenly she became cyanotic and the respirations ceased though the heart kept on beating. Artificial respiration was resorted to and breathing started but after a while ceased again. Artificial respiration was resumed and a Drinker respirometer used but to no avail; the patient died. This presented a problem as to what was the cause of death, since the patient had been brought out of coma chemically and death in coma presents a cardiac not a respiratory failure. Autopsy cleared up the problem. While the patient had been brought out of coma, the general weakness had still been marked. The stomach contents had been regurgitated and had trickled down the trachea and choked her. I am therefore emphasizing the point of gastric lavage, as one lesson should be enough to prevent similar accidents. It is better to perform a few unnecessary lavages and be on the safe side than to lose a patient because of their omission.

The importance of the nursing and the medical care is obvious. There is no other emergency in medicine which requires a closer supervision day and night until the patient is out of danger and for some time after that, for a relapse may occur in a few hours if treatment is not sustained. To care for a patient in coma is not a matter of a few hours but a continuous day and night problem until the patient is safe. There is where laboratory data enable one to proceed with safety and assurance by eliminating all guesswork.

Circulatory stimulants are indicated. Caffeine sodiobenzoate, from 6 to 9 grains (0.4 to 0.6 Gm.) at a time, may be incorporated into the solution of sodium chloride and dextrose given intravenously. However, it must be remembered that the restoration of the volume of blood through hypodermoclysis or the intravenous administration of dextrose with insulin is one of the best cardiac supports that can be given the diabetic patient in coma. Most of the time this is all the support that needs to be supplied. Clearing the circulation of the concentrated ketone bodies relieves the heart of an irritating and weakening factor and gives it a chance. One should bear in mind, however, that a patient who has just been brought out of coma to consciousness is like a patient who has just recovered from typhoid fever or pneumonia. The heart is weak and needs protection. I saw one patient years ago who came out of coma and seemed to be doing nicely, but the mere strain on a bed pan and being in an upright position brought on a fatality. One cannot be too careful of these patients and caution is necessary.

When the patient can take liquids by mouth, this helps to reduce or to eliminate the required amount of exogenous liquids. Citrus fruits are the best to use at the beginning, as they tend to bring about the swing toward the alkaline side and thus partly counteract the acidosis. Lemon and grapefruit juice are the best. I have found that when there is a tendency to nausea the patient does not tolerate orange juice well. It is apt to bring on vomiting and that weakens the patient. If orange juice is used at all, it should be well diluted with water. A weak lemonade or grapefruit-ade is preferable. This can soon be followed by a soft diet, starting with oatmeal gruel, milk toast and buttermilk.

The use of alkalis is much disputed. It has many adherents [2] and many opponents.[3] The truth lies probably somewhere in the midground. Alkalis should be used sparingly and as such can do no harm and are often of help. The easiest way of furnishing alkalis is, as previously mentioned, through the gastric tube after lavage at the beginning of the treatment. This probably will suffice; but the carbon dioxide values will indicate any further need for this.

MORTALITY STATISTICS

The mortality in diabetic coma is still high. One needs but to glance over the world literature to be convinced of this. According to data given by sixteen

authors on 424 cases of coma the mortality was 19.2 per cent. This is a high average ratio and time will no doubt improve it. Mortality figures as given range from 0 to 55 per cent.

There is one way of bringing about a better result and that is by early treatment. Adequate treatment comes next in importance. However, adequate early treatment presents an entirely different picture from that of adequate treatment late in the condition; there will be two entirely different sets of figures no matter who takes care of the patients. The main effort should be made to lose no time in starting treatment. If one sees a patient in coma at his home or if one has a telephone call from the family physician and the diagnosis is reasonably certain, give or direct to be given 40 units of insulin immediately, before the patient is taken to the hospital, thus saving the loss of at least an hour. If a patient must be brought from any distance, have 40 units given at first and then 20 units every half hour thereafter until he reaches the hospital. Many lives will be saved in this manner. I noticed that in the last review of my cases of coma Joslin classified some of these as cases of acidosis, since he differentiates coma from acidosis merely by the carbon dioxide values. The higher carbon dioxide values that I reported were obtained when the patient reached the hospital and after he had had the preliminary dose of insulin on the way. These were cases of coma and not mere acidosis. It is more important to start treatment at once and obtain the laboratory data later than the reverse. Laboratory data are to be used merely as a guide and all statistics must be interpreted with caution.

Death in coma is often due to vasomotor collapse, septicemia, uremia, aspiration of gastric contents into the trachea or terminal hyperpyrexia.

HYPOGLYCEMIA

Hypoglycemia as brought about by the excessive use of insulin is still dreaded by many physicians. The fear of hypoglycemia was instilled by some early writers following the discovery of insulin. It was an unwise warning, which did much harm and cost many lives. The general practitioner was literally afraid to use insulin, and many are still afraid to use it and advise their patients that insulin is only the last resort in the treatment of diabetes. It will take time and a great deal of educational work to counteract this fear.

The best illustration I [8] can give that the general practitioner is actually afraid of insulin is my own experience in cases of coma in children. In my series of 218 cases of diabetes in children over a period of thirteen years there were fifty cases of coma. Of these fifty patients I treated thirty-one and the remaining nineteen were treated by the family physician during the emergency. Of the thirty-one whom I treated, five died: one in the preinsulin era, and three one hour after admission, having been in coma for a long time before reaching the hospital and arriving in a moribund state. Of the nineteen patients treated by the family physician, sixteen died. I feel that the fault lies not so much in the physician as in the early writings on insulin, which frightened him so that he will not use insulin except as a last resort, when it is obviously too late to accomplish anything. This should be a lesson to all.

One thing to bear in mind in cases of coma is that insulin does not exert the same action per unit as it does in a noncomatose patient. It takes a great deal more insulin to bring about the same results. Large doses should be used at the beginning. If studies of the blood sugar content are not available, one must depend on catheterized urine as a guide.

Is there any great danger from hypoglycemia? I feel convinced that, barring old arteriosclerotic patients or patients with cardiac damage, there is but little or no danger. Furthermore, hypoglycemia is easy to counteract. A few cubic centimeters of a solution of dextrose intravenously will correct the condition in a few minutes. When I see the numerous nondiabetic patients who have chronic hypoglycemia, with values ranging in the thirties and forties for over long periods of time, I fail to be convinced that hypoglycemia lasting for a few minutes in a case of coma jeopardizes the patient's life. The danger is more from too little than too much insulin. I do not mean that insulin should be used promiscuously without any consideration for the patient. It should be used wisely; but to use it wisely one needs laboratory data and experience.

The symptoms of hypoglycemia have been described so often and so thoroughly that I need not dwell on them here. Usually profuse perspiration, a rapid pulse rate and a certain type of pallor are indicative of this condition.

TABLE 4.—*Acidosis and Alkalosis*

	Acidosis	Alkalosis
Headache	+	+
Mental depression	+	+
Thirst	+	+
Anorexia	+	+
Polyuria	+	+
Polydipsia	+	+
Diarrhea	0	?
Dehydration	+	+
Asthenia	+	+
Muscular twitching	0	+
Delirium	0	+
Coma	+	+
Concentrated blood: high erythrocyte and hemoglobin values	+	+
Carbon dioxide-combining power, mg.	10 to 35	80 to 100
Increased nonprotein nitrogen value	+	+
Chlorides, mg.	500 to 600	300 or less
Low blood pressure	+	+
Urine	Acid	Alkaline
Treatment	Sodium chloride Insulin Dextrose	Sodium chloride Ammonium chloride

OTHER MANIFESTATIONS

Acidosis and Alkalosis.—As acidosis leads up to coma, one is therefore apt to see the patient in the precomatose stage of acidosis. There is another condition which one should bear in mind in the differential diagnosis which is very similar and for that reason I am stressing it. This condition is just the opposite of acidosis; namely, a condition of alkalosis. Table 4 shows how similar these two conditions are.

Coma Without Acetone in the Urine.—Acetone in the urine, while an almost constant accompaniment in diabetic coma, may not be present during this emergency, as there are many cases of this type on record in the literature.[9] It is the same with this as any other diagnostic problem in medicine—no one sign needs to be present in all cases and it is apt to be lacking in any given case. Because acetone is not found in the urine, one must not be misled.

8. John, H. J.: Diabetic Coma in Children, Am. J. Digest. Dis. & Nutrition **1**: 569-578 (Oct.) 1934.

9. Borg, J. F.: Diabetic Acidosis: Etiologic Factor in Production of Auricular Fibrillation, Minnesota Med. **11**: 580 (Sept.) 1928. John, H. J.: Diabetic Coma Complicated by Acute Retention of Urine, J. A. M. A. **84**: 1400-1401 (May 9) 1925. Joslin, E. P., and others: Diabetic Coma, M. Clin. North America **13**: 11 (July) 1929. Foster,[7] Hartmann[3] John,[6] Campbell.[2]

COMPLICATIONS IN COMA

There are several complications that may arise during the progress of the emergency of diabetic coma. The foremost is perhaps cardiac embarrassment. Bowen [2] reported two cases in which clinical paroxysmal auricular fibrillation developed during coma. Both patients recovered. Borg [9] reported a case in which several attacks of diabetic acidosis and coma occurred, the last two attacks being accompanied by auricular fibrillation. The case is indicative of the etiologic relation of acidosis to auricular fibrillation and to ensuing myocardial insufficiency. Insulin relieved the auricular fibrillation. Caffeine, epinephrine and digitalis administered intramuscularly are recommended by various authors. In cases of profound cardiac collapse, strophanthin, 1/120 grain (0.5 mg.), should be given intravenously.

Anuria and oliguria have been reported as occurring during a state of coma.[10] This must be dealt with promptly. I have seen but two patients with this type of case and in both the use of Fischer's solution intravenously cleared up the condition.

When a patient is unconscious, one must watch for distention of the bladder, which will occur periodically and require catheterization.

Infections of various kinds—otitis media in children, mastoiditis, acute appendicitis—are apt to be present, for these often lead up to coma and must not be missed. In fact an acute abdominal condition is often present and I do not know of a harder problem to solve. One can never be absolutely certain whether one is dealing with merely a comatose state with abdominal symptoms or coma plus acute appendicitis. When a problem like that is presented, one should share the responsibility with a surgeon so as to play safe with the patient as well as with oneself. Many a patient has been operated on for acute appendicitis and a normal appendix has been found, to the great chagrin of the surgeon. However, when there is any doubt and the diagnosis seems reasonably certain, an operation should be performed. It is a serious matter, however, to operate on a patient in coma, and the closest supervision is necessary on the part of the physician. Thus far, fortunately, I have not encountered such an emergency, although I have seen many patients in coma with signs of appendicitis.

SUMMARY

1. Diabetic coma presents a major medical emergency, which must be dealt with promptly, efficiently and adequately.

2. The treatment rests on two main aids: insulin and liquids. These are of primary importance. There are other accessory aids.

3. The outcome in cases of diabetic coma depends largely on how early the treatment is started. The longer treatment is delayed, the poorer the patient's chance for recovery.

4. Coma still presents a high mortality rate, the average as given in the literature being in the neighborhood of 20 per cent.

5. Complications during coma, such as cardiac embarrassment, anuria, overdistention of the bladder and infections, may arise, and they should be dealt with promptly.

10515 Carnegie Avenue.

10. Begg, A. C.: Anuric Diabetic Coma, Lancet **2**: 69 (July 11) 1925. Imrie, C. G., and Skinner, E. F.: Diabetic Coma with Anuria, ibid. **1**: 14 (Jan. 5) 1924. Foster.[7] John.[8] Bowen.[2] Joslin.[6]

GLANDULAR PHYSIOLOGY AND THERAPY

THE THYMUS GLAND

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NOTE.—*This article and the articles in the previous issues of* THE JOURNAL *are part of a series published under the auspices of the Council on Pharmacy and Chemistry. The last will appear in the next issue. When completed, the series will be published in book form.*—ED.

Uncertainty has characterized our knowledge of the thymus gland from ancient down to modern times; its function has remained a riddle. Despite the fact that the gland occurs in all higher animals and in lower orders down to primitive fishes, its nature is not understood. By some it is considered a gland of internal secretion, by others a part of the lymphatic system or a vestigial structure. Though epithelial in origin, the gland becomes lymphoid in character at birth or with advancing years. Pappenheimer [1] regards it as an epithelial rather than as a lymphoid organ, an assumption that has not been proved. Cowdry [2] states that "the thymus undergoes lymphoid transformation as vestigial structures, i. e., the vermiform appendix, have a tendency to do."

The thymus together with the parathyroids arises from the third and sometimes from the fourth branchial clefts, the thymus from the ventral and the parathyroids from the dorsal diverticulum. The thymus and parathyroids, therefore, are intimately associated in their development, and recent work would seem to indicate that they may possibly share some functions in common. Parathyroids are frequently embedded in the thymus gland. The thymus anlage descends in the neck, the gland locating finally in the lower part of the neck or upper part of the thorax. The thymus usually consists of two adjacent lobes. In some animals it presents the so-called neck and heart thymus. Under the microscope it is seen to consist of a cortex and a medulla. Within the medullary portions are concentrated the well known but little understood characteristic structures called Hassall's corpuscles. These are considered by some as epithelial in type and by others as reticular cells capable of phagocytosis. A secretory function has not been established. Obviously ignorance prevails.

Careful studies on the growth and development of the thymus gland have been made by various workers: by Hammar [3] (1906 to 1929), by Bratton [4] (1925) and by Young and Turnbull [5] (1931) of the Status Lymphaticus Committee working under the auspices of the National Research Council of Great Britain. It is obvious that knowledge of the normal development is

This work has been aided by a grant from the American Philosophical Society.

1. Pappenheimer, A. M.: The Effects of Early Extirpation of the Thymus in Albino Rats, J. Exper. Med. **19**: 319, 1914; Further Experiments on the Effects of Extirpation of the Thymus in Rats, with Special Reference to the Alleged Production of Rachitic Lesions, ibid. **20**: 477, 1914; Recent Advances in Thymus Research, Am. Med. **9**: 212, 1914.

2. Cowdry, E. V.: Special Cytology, ed. 2, New York, Paul B. Hoeber, Inc., 1932.

3. Hammar, J. A.: Zur Histogenese und Involution der Thymusdrüse, Anat. Anz. **27**: 23, 1905; Die Funktion der Thymusdrüse im Lichte der Organreaktionen unter anormalen Körperverhältnissen, Klin. Wchnschr. **8**: 2313 (Dec. 10) 1929; Asserted Nonexistence of Age Involution of Thymus Gland, Endocrinology **11**: 18 (Jan.-Feb.) 1927.

4. Bratton, A. B.: The Normal Weight of the Human Thymus, J. Path. & Bact. **28**: 609 (Oct.) 1925.

5. Young, M., and Turnbull, H. M.: Status Lymphaticus, J. Path. & Bact. **34**: 212 (March) 1931.

essential to recognition of the abnormal development of the thymus gland. It is unfortunate, therefore, that no general agreement has been reached concerning the weight of the thymus in infancy and early childhood; that is, at the age when status thymicolymphaticus is most prevalent. Hammar found the thymus weight at birth to be 12 Gm., at 5 years 23 Gm., at 10 years 26 Gm., at puberty 37.5 Gm., at 20 years 25 Gm. Young and Turnbull, however, give the average weight of the thymus at birth as 21.3 Gm. and find a gradual increase until puberty to 34 Gm., after which the weight gradually diminishes so that at midlife it is in the neighborhood of 15 Gm. Despite failure to establish an accepted weight in the first years of life, it seems to be proved that the thymus is relatively and absolutely largest during the period of greatest growth, and that the gland begins involution at puberty and thereafter diminishes in size.

Although the literature on the thymus is unusually voluminous, little is known at present concerning its function. Hoskins [6] states that "more and more research of recent years has continued to cast doubt upon the thymus as a member of the endocrine congregation." Information concerning the function of the thymus is gleaned from two sources: physiologic studies in the laboratory and clinical observations on patients together with correlated observations at autopsy. Physiologic investigations on the thymus gland comprise chiefly the effects of its removal at different ages and of the administration of thymus extract or of the feeding of thymus substance.

Friedleben [7] in 1858 carried out extensive studies leading to the belief that the thymus is not indispensable but that it has an important bearing on blood formation and on nutrition and growth. Basch [8] (1902) emphasized its importance in the young, claiming that thymectomy in the young results in a form of osteomalacia or rickets. He believed that the thymus was concerned in some way with growth and with the calcification of bones. Its relation to calcium metabolism has also been suggested by the work of Hewer [9] (1914) and Nitschke [10] (1929), as well as the work on eggs, which will be commented on later. The work of Basch was followed by that of Klose and Vogt [11] (1910 to 1914). According to their observations, thymectomy in the young was followed by a latent period, then adiposity, and finally a period of cachexia, in which nutritional disturbances and spontaneous fractures occurred followed by death. Next came the excellent, careful, critical review by Park and McClure [12] (1919) of the work on the thymus from the time of Restelli [13] (1845) down to the year 1919. These investigators also recorded their own experiments, which led them to the opinion that extirpation of the thymus probably does not influence growth and development. They concluded that:

1. The thymus gland is not essential to life in the dog. 2. Extirpation of the thymus produces no detectable alteration in the hair, teeth, contour of the body, muscular development, strength, activity or intelligence of the experimental animal. 3. Extirpation of the thymus probably does not influence growth and development. The possibility that it may cause retardation in development and delayed closure of the epiphyses, however, cannot be excluded absolutely. 4. Extirpation of the thymus probably produces no alterations in the organs of internal secretion. It is possible that it produces well marked changes in the organs of internal secretion in the period immediately following thymectomy, which was not covered in our experiments.

Work on birds has furnished some interesting considerations. Soli stated in 1910 that thymectomy in pullets results temporarily in the laying of eggs without shells. Oscar Riddle [14] found that pigeons occasionally lay eggs deficient in shell and at autopsy these birds showed defective thymus glands. Dried thymus substance fed by him to such pigeons led to the laying of normal eggs.

As a result of feeding thymus glands to tadpoles, Gudernatsch [15] found in 1913 that they grew more rapidly and some reached enormous size prior to metamorphosis. This led to the thought that thymus furnishes an important growth stimulus. These results were subsequently confirmed by Uhlenhuth,[16] who explained them on an entirely different basis; i. e., one of nutrition. Gudernatsch accepted the explanation that the results were due "merely to thymus diet as food."

Probably the most important and convincing work yet reported is a series of investigations carried on in Asher's laboratory.[16a] Wiktor Nowinski [17] administered an aqueous thymus extract called "thymocrescin" to rats and found that, given daily, it overcame the loss of weight of animals incident to a vitamin-free diet. The extract stimulated growth, overcame vitamin deficiency and increased the size of the gonads.

Despite all these experiments and thousands of others, which for lack of space cannot be quoted, doubt has continued to exist relative to the function of the thymus gland in the minds of most physiologists, endocrinologists and clinicians. It may be said with truth that physiologic studies have in no way affected modern medical practice so far as thymus therapy is concerned.

Clinical studies have also contributed something to our knowledge of the thymus. The gland varies greatly in size in various conditions. There is enlargement in exophthalmic goiter, Addison's disease, acromegaly and status thymicolymphaticus, and supposedly in certain cases of myasthenia gravis and rickets. The enlarge-

6. Hoskins, R. G.: The Tides of Life, New York, Macmillan Company, 1933.

7. Friedleben, A.: Die Physiologie der Thymusdrüse in Gesundheit und Krankheit vom Standpunkte experimenteller Forschung und klinischer Erfahrung: Ein Beitrag zur Lebensgeschichte der Kindheit, Frankfurt a. M. literarische Anstalt, 1858.

8. Basch, K.: Ueber Ausschaltung der Thymusdrüse, Verhandl. d. Gesellsch. deutsch. Naturf. u. Aerzte, Leipzig, 1902; Wien. klin. Wchnschr. **16:** 893, 1903; Bemerkungen zu Rudolf Fischl's Experimentelle Beiträge zur Frage der Bedeutung der Thymusexstirpation bei jungen Tieren, Ztschr. f. exper. Path. u. Therap. **2:** 195, 1905; Beiträge zur Physiologie und Pathologie der Thymus, Jahrb. f. Kinderh. **68:** 668, 1908; Zur Thymusexstirpation beim jungen Huhn, Monatschr. f. Kinderh. **7:** 541, 1908.

9. Hewer, E. E.: The Effect of Thymus Feeding on the Activity of the Reproductive Organs in the Rat, J. Physiol. **47:** 479, 1914; The Structure of the Thymus Gland and of the Reproductive Organs in White Rats, Together with Some Observations on the Breeding Capacity of These Animals, ibid. **50:** 434, 1914.

10. Nitschke, A.: Darstellung zweier wirksamer und spezifischer Thymussubstanzen, ihr Einfluss auf Kalk und Phosphatgehalt des Kaninchenserums, Ztschr. f. d. ges. exper. Med. **65:** 637, 1929; Die Beeinflussung des Grundumsatzes durch Thymus und Milzextrakt (P. Substanz), Monatschr. f. Kinderh. **47:** 530, 1930.

11. Klose, H., and Vogt, H.: Klinik und Biologie der Thymusdrüse mit besonderer Berücksichtigung ihrer Beziehungen zu Knochen und Nervensystem, Beitr. z. klin. Chir. **69:** 1, 1910. Klose, H.: Ueber Thymusexstirpation und ihre Folgen, Arch. f. klin. Chir. **92:** 1125, 1910.

12. Park, E. A., and McClure, R. D.: The Results of Thymus Extirpation in the Dog, Am. J. Dis. Child. **18:** 317 (Nov.) 1919.

13. Restelli, D. A.: De thymo observationes anatomico-physiologico-pathologicae, ed. 4, Ticini Regii ex topog. Fusi et soci, 1845.

14. Riddle, Oscar, and Krizenecky, Jaroslav: Extirpation of Thymus and Bursa in Pigeons with a Consideration of the Failure of Thymectomy to Reveal Thymus Function, Am. J. Physiol. **97:** 343 (May) 1931. Riddle, Oscar, and Frey, P.: The Growth and Age Involution of the Thymus in Male and Female Pigeons, ibid. **71:** 413 (Jan.) 1925.

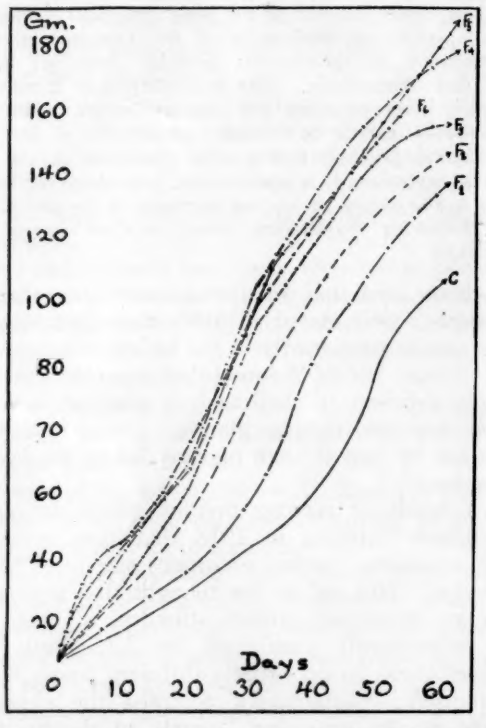
15. Gudernatsch, J. F.: Feeding Experiments on Tadpoles, Am. J. Anat. **15:** 431-478, 1913-1914.

16. Uhlenhuth, quoted by Hoskins.[6]

16a. Asher, L.: Der Einfluss der Thymus auf das Wachstum und die Herstellung eines wirksamen Thymusstoffes Thymocrescin, Endokrinologie, **7:** 321 (Nov.) 1930.

17. Nowinski, Wiktor: Fortgesetzte Untersuchungen über den Einfluss des Thymocrescins auf das Wachstum, Biochem. Ztschr. **249:** 421, 1932.

ment in exophthalmic goiter is considered by some authorities to be in the nature of a compensatory hypertrophy. There is also enlargement after hypophysectomy and adrenalectomy. It is persistent in eunuchs and its involution is delayed in victims of early castration. The gland is diminished in size after puberty; this fact led Swale Vincent to propose the hypothesis that normal involution of the thymus is due to the development of the reproductive organs. The thymus diminishes in size in starvation, inanition, marasmus and wasting diseases generally, a fact too often overlooked. Its enlargement in Addison's disease and exophthalmic goiter constitutes an exception to this rule. The gland is subject to inflammation and infection and to syphilis and tuberculosis and is occasionally the seat of tumor formation.



Weight curves of thymus test rats and their controls. *C*, controls; F_1, second generation of test rat; F_2, third generation; F_3, fourth generation; F_4, fifth generation; F_5, sixth generation; F_6, seventh generation.

Enlargement or hypertrophy of the thymus is frequently diagnosed. This has been considered of great importance because it is supposed to have led to many tragic deaths in infants and children, an association first noted by Bichat. According to Osler and McCrae [18] enlargement of the thymus may be associated with (*a*) thymic stridor, seen commonly at or shortly after birth, (*b*) thymic asthma, a more exaggerated and more persistent form of stridor and (*c*) status thymicolymphaticus.

Status thymicolymphaticus is defined as "a condition in childhood of hyperplasia of lymphatic tissues and of the thymus in association with a flabby fat overgrowth of the body and hypoplasia of the heart and blood vessels. Pathologic examination discloses overgrowth of the body and relatively large heads, hyperplasia of the lymph glands and structures of the tonsillar ring, moderate enlargement of the external and internal lymph glands and hyperplasia of the solitary and agminated follicles of the small and large intestine" and atrophy of the adrenals.[19] "The thymus is enlarged, swollen and soft, the bone marrow is hyperplastic and in young adults the yellow is replaced by red marrow; a small heart and small aorta and peripheral vessels have been found at times and an associated condition of rickets." Osler says that "what has called special attention to this condition is the tragedy of sudden death following trifling causes, the prick of a hypodermic needle, a sudden plunge in cold water but much more often in anesthesia, either ether or chloroform, when an amount has been given not in itself lethal." He advances two explanations, the mechanical and the hormonic. Recently doubt has been cast on the very existence of this disease by Young and Turnbull of the British commission, appointed in 1931 for the study of status thymicolymphaticus. The sudden death that is said to characterize this condition has never been proved to be due to an excess of thymus secretion. However, the poorly developed gonads and adrenals and hypoplasia of the cardiovascular system that are found in this condition do exist at times and may have some relation to the enlargement of the thymus.

My own studies on the thymus gland have been carried out in the Philadelphia Institute for Medical Research in the Philadelphia General Hospital, in conjunction with Dr. J. H. Clark and Mr. Arthur Steinberg of Philadelphia and Dr. A. M. Hanson of Faribault, Minn.[20] In 1930 Dr. Hanson prepared an extract from the thymus which he called "karkinolysin" for use in the treatment of cancer. We undertook to determine its physiologic and biologic effects on rats. Dr. Hanson's thymus extract is an acid aqueous extract of the neck thymus of young calves from 2 to 6 weeks of age (the heart thymus has not yet been studied). It is a stable preparation preserved with chlorbutanol and represents 0.6 Gm. of raw thymus per cubic centimeter. Locally it is nonirritating on parenteral administration and nontoxic to rats in amounts up to 5 cc.

Comparison of Thymus Treated Rats with Controls

	Average Birth Weight, Gm.	Ears Open, Days	Teeth Erupted, Days	Hair Appeared, Days	Eyes Opened, Days	Testes Descended, Days	Vagina Opened, Days
Controls	4.6	2.5-4	9-10	14-17	14-17	35-40	60-70
F_1.....	5.0	2	4-7	10-14	12-15	15-23	35-45
F_2.....	5.2	1-2	1-2	4-6	4-6	5-9	23-31
F_3.....	5.7	1	1	4-5	4-5	4-6	21-25
F_4.....	5.7	1	1	3	3	4-5	18-19
F_5.....	5.74	½-1	½-1	2	2	4-5	18
F_6.....	4.7	At birth*	At birth*	1-2	1.5-2	3-4	16

* On first inspection or within 24 hours.

Hanson believes that the active substance represents a product of the epithelial and not of the lymphatic cells.

In our work, white rats of the Wistar strain have been injected intraperitoneally daily for sixteen months with an extract of the thymus prepared by Hanson.[21] In the first generation (F_0) treated test animals were heavier, bred more frequently and had larger litters of

18. Osler, William, and McCrae, Thomas: The Principles and Practice of Medicine, ed. 12, New York, D. Appleton-Century Company, 1935.

19. Aschoff, Ludwig: Lectures on Pathology, New York, Paul B. Hoeber, Inc., 1924.

20. Rowntree, L. G.; Clark, J. H., and Hanson, A. M.: The Biological Effects of Thymus Extract, Am. J. Physiol., to be published; The Biological Effects of Thymus Extract (Hanson), Science **80**: 274 (Sept. 21) 1934; J. A. M. A. **103**: 1425 (Nov. 10) 1934.

21. My collaborators and I have been fortunate in having available a large supply of thymus extract of apparently uniform potency; this was prepared by Dr. A. M. Hanson in 1930 and was bottled in special molded resistance glass having a low alkali content.

heavier average weight per rat. Little of note appeared in the second generation in the first six litters cast, but in the later litters (the seventh to the eleventh) precocity appeared. In the tenth and eleventh litters the animals were larger than normal, teeth erupted on the second day and the eyes opened on the tenth day.

In the animals of the third to seventh (F_2 to F_6) generations, striking and accruing precocity, acceleration in growth and development, were noted in the offspring of each succeeding generation under treatment. The normal rate of growth and development and the precocity resulting from continuous administration of thymus extract through succeeding generations is shown in the accompanying table. The increasing growth as indicated in the weight curve is shown in the accompanying chart. Similar effects were not observed from thymus feeding.

Because of the astounding precocity, a study of the chemistry of the rats' blood was undertaken, which revealed definite changes in the calcium and phosphorus content. Whereas in our control rats the calcium content was from 9 to 11 and the phosphorus from 3 to 4 mg. per hundred cubic centimeters of blood serum, in the thymus test animals from the second to the fourth generation the blood serum calcium increased to from 11.4 to 13.3 with an average of 12.3, and the inorganic phosphorus reached from 4 to 7.5 with an average of 6.1 mg. per hundred cubic centimeters. This would seem to have some definite bearing on the rapid skeletal development observed in the young. A study of hemoglobin content and of red and white cell counts by Dr. Lansbury [22] showed no deviation from normal.

Roentgen studies of the skeleton made at weekly intervals in collaboration with Dr. L. Einhorn and Dr. B. P. Widmann revealed marked differences between the skeletons of the controls and those of the seventh generation of thymus treated rats. In the test animals (1) there is an increase in all dimensions, particularly in the length of the diaphyses of the long bones for the actual age of the animals; (2) the centers of ossification of the epiphyses of the long bones are visible earlier; (3) the centers of ossification of the epiphyses of the long bones and the vertebrae calcify and unite earlier.

The effects of thymus extract on the heart, studied in conjunction with Dr. McMillan, Dr. Bellet and Mr. Steinberg, revealed the facts that small doses have little or no effect on the cardiac action and that large doses depress blood pressure and cause death through inducing complete auriculoventricular heart block. This may be of interest perhaps in relation to sudden death in status thymicolymphaticus.

It is doubtful whether our work has progressed sufficiently far to throw any light on the question of status thymicolymphaticus. Suffice it to say that the continuous administration of thymus extract (Hanson) results in marked precocity in the offspring of treated parents after the second generation. The young show increased growth and development, small adrenal glands and lymphatic hyperplasia, especially marked in the glandular structures of the intestine, but they show no susceptibility to sudden death from fright, the use of the hypodermic needle, immersion in cold water, or from operation or anesthesia. So far as we are concerned, the condition status thymicolymphaticus is still *sub judice*.

22. Lansbury, J.; Clark, J. H., and Rowntree, L. G.: Lesions of the Thymus Gland as Noted in 25,000 Autopsies, unpublished paper.

From the foregoing it is apparent that there is still a state of ignorance rather than of enlightenment relative to the thymus gland. More work is necessary on the thymus from the standpoint of biology, embryology, histology, physiology, pathology, pediatrics and clinical medicine.[23] Our own work indicates that thymus extract, when administered continuously through successive generations of parents, leads to striking, accruing precocity in the growth and development of successive generations of young. Thymus extract increases the fertility of adult rats. The young of the third and succeeding generations grow and develop physically, sexually and psychically at an unbelievable rate. They do not, however, become giant rats, as the rapid rate of growth decreases from the second month on. From our experimental studies it would seem desirable to consider the thymus gland clinically in conditions involving problems of fertility in adults and of growth and development in infancy, and in early childhood; probably also in disturbances attending puberty. A clinical trial in these fields is being made at the present time.

23. In work carried on with Dr. N. H. Einhorn, retardation of growth in the offspring has been encountered following thymectomy in successive generations of parents.

Therapeutics

THE THERAPY OF THE COOK COUNTY HOSPITAL

EDITED BY BERNARD FANTUS, M.D.
CHICAGO

NOTE.—*In their elaboration, these articles are submitted to the members of the attending staff of the Cook County Hospital by the director of therapeutics, Dr. Bernard Fantus. The views expressed by various members are incorporated in the final draft for publication. The series of articles will be continued from time to time in these columns.*—ED.

THERAPY OF URTICARIA AND OF ANGIONEUROTIC EDEMA

OUTLINE BY DR. THEODORE CORNBLEET

Urticaria is a symptom complex the characteristic lesion of which is the wheal. The lesion is fugacious and itches. There may be other symptoms and signs, but generally these are less significant.

The diagnosis of urticaria is just the beginning of the consideration of the case, as this is not a disease in itself but merely visible evidence that the subject is reacting to something to which he is hypersensitive. Urticaria can be produced not only by substances taken into the body but also by things that are touched, that are inhaled or that come close to the patient. And, in addition to these, agents may be present in the subject's body or be elaborated there which produce urticaria.

Thus the list may include substances as far apart as foods or drugs, materials or objects one works with, harbored parasites such as tapeworms, a sinusitis or other focus of infection, a constitutional ailment such as leukemia, infectious processes such as septicemia, hypersensitiveness to some physical agent such as cold, or even emotional disturbance. The list of possibilities is indeed bewildering, unless one adopts a systematic evaluation of all of them in any given case.

This systematic consideration of the possibilities must be tailor made to fit the individual. To the extent that

the search is done in a routine way, there will be a saving of time, money and trouble, and greater assurance of success. Foremost among all measures in apprehending the cause of the urticaria is a good physical examination of the patient and the obtaining of a history by logical, common sense questioning.

As there is a considerable difference between the treatment suitable to acute and to chronic urticaria, this will form the basis of its division.

ACUTE URTICARIA

1. *Causal Treatment.*—Evacuation: (a) Emesis induced shortly after the ingestion of the offending or suspected food (e. g., shellfish, strawberries) will remove that which may still be in the stomach. In children, this is preferably secured by Syrup of Ipecac, a teaspoonful or two followed in ten minutes by a large draft of lukewarm water and, if there is no emesis, another dose of syrup in another ten minutes, continuing in that way until evacuation of the stomach has occurred. For adults, one might prefer a hypodermic injection of Apomorphine Hydrochloride, 5 mg., which usually does not produce emesis earlier than ten minutes after the administration.

(*b*) Cathartic: A saline should be preferred because of its rapid action; e. g., a tablespoonful or two of Magnesium Sulphate, which might be administered, for best possible disguise, in effervescent ice-cold lemonade. For children, Solution of Magnesium Citrate in wineglassful doses every two hours, until the effect is secured, might be preferable.

Diet: (*a*) No food should be allowed the first day, and beef tea and hominy the following day, with rice and next oatmeal gruel being added to the diet on succeeding days. Salt, sugar and gelatin (which have never been reported to cause allergy) may be admitted freely as desired. Bacon, dates, lentils and kidney beans, spinach, parsnips, rhubarb and brussels sprouts may also be admitted early, as these are among the foods to which people seem to be least sensitized. Foods that most commonly cause allergy are wheat, eggs, milk, chocolate, tomato, cabbage, orange and potato. Hence these should be added last, best successively, to enable one to scrutinize the effect of each addition.

(*b*) In cases with an obstinate tendency to relapses, it might be well to start out with an absolute milk diet. One should give milk, buttermilk or cream and seltzer water (equal parts) every two hours for three days. This may make the patient worse if he is hypersensitive to milk, whereupon it and its derivatives will have to be rigidly excluded from subsequent diets. If he is not hypersensitive to milk, it will make the planning of the diets much easier.

(*c*) One may then resort successively to allergy diagnosis diets (Rowe's "elimination diets"), carefully observing the effect of each change in diet.

ALLERGY DIAGNOSIS DIETS (ROWE'S "ELIMINATION DIETS")

DIET 1.—*Rice and Lamb.*—Absolutely no foods other than those specified in this diet are to be used. If the patient is not sensitive to milk, he may have it in addition to the other articles prescribed in this diet.

Prescribed fruits can be used in drinks, salads, and for dessert, jams and sauces. Calories must be increased by plenty of sugar, oil and the type of starch allowed.

Gravies and sauces can be thickened only with the flour prescribed: as, for instance, rice flour in this diet.

The rice must not be fried with butter, lard or any other fat except the one specified, which is olive oil in this diet.

Bread is not permitted in this diet.

Illustrative Menu.—Breakfast: Rice boiled, natural or fried in olive oil and served with sugar or preferably maple syrup; also peach or pear may be used.
Coffee without milk or cream, unless the patient is found not sensitive to these.
Pears and peaches, fresh or canned, a large helping.
Lemonade with plenty of sugar.
Milk, if permitted, as much as desired.

Dinner and Supper: Soup: Lamb broth with rice, carrots, spinach, lettuce or rhubarb.
Salad: Lettuce with pears, peaches, unstuffed olives, olive oil, lemon juice.
Meats: Roast lamb, broiled or fried lamb chops with rice flour and olive oil. (Gravy as desired, but must be thickened with rice flour only.)
Vegetables: Spinach, carrots, lettuce, rhubarb, large helpings.
Dessert: Lemon gelatin, pear or peach, as much as desired.
Filbert nuts as desired or rhubarb sauce sweetened with sugar or maple syrup.
Drinks: A lemonade with plenty of sugar; black coffee; milk, if permitted.
Miscellaneous: As much as desired of sugar, salt, olive oil, gelatin, maple syrup, olives (black or green, but unstuffed).

DIET 2.—*Rice, Rye and Fish.*—No meats are allowed in this diet; fish is used instead; if the patient is sensitive to fish but not to eggs, substitutions are indicated. The only bread allowed is Rye-Rice or Ry-Crisp. Rye-Rice bread is made as follows: one-third cup rye flour, two-thirds cup rice flour, 6 level teaspoonfuls Royal Baking Powder (which does not contain any egg), 4 level teaspoonfuls sugar, one-fourth teaspoonful salt, two-thirds cup water, one-half teaspoonful shortening. This recipe makes eight small muffins.

Illustrative Menu.—Breakfast: Cereal: rice boiled, natural, served with apricot, pear or sugar, or fried in olive oil and served with molasses.
Bread: Rye-Rice or Ry-Crisp.
Fruits: Pineapple, prunes, apples, large helpings.
Drinks: Tea, milk if tolerated, juices of the fruits already mentioned.

Dinner or Supper: Soup: Vegetable soup of lettuce, carrots, peas, beets, rhubarb.
Bread: As for breakfast.
Salads: Lettuce, beets, pineapple, olives (unstuffed), prunes with olive oil.
Vegetables: Lettuce, carrots, peas and beets, rhubarb with rice, if wanted.
Dessert: Pineapple gelatin or prunes; apples, large helpings. Filberts if desired. Rhubarb and apple sauce sweetened with sugar or molasses.
Miscellaneous: Sugar, salt, gelatin, olives, molasses and filberts.

DIET 3.—*Tapioca, Rice and Beef.*—Butter, lard or other fats must not be used except the one specified, which is Wesson Oil in this diet. Bread is not yet permitted.

Illustrative Menu.—Breakfast: Cereal: Rice boiled, natural, served with peaches or pear juice or sweetened with sugar or maple syrup; may be fried with Wesson Oil. Tapioca baked with peaches and sugar or maple syrup and flavored with grapefruit juice.
Fruits: Grapefruit, pears or peaches, liberal helping; also apples.
Drinks: Grapefruit juice sweetened with plenty of sugar, coffee, milk (if permitted).

Dinner and Supper: Soup: Beef broth with rice, string beans, celery.
Salad: Tomatoes, celery, string beans, peaches, grapefruit, pears sweetened with sugar and sprinkled with Wesson Oil.

Meats: Roast or broiled beef with gravy or rice flour, fried with Wesson Oil if desired.
Vegetables: String beans, sweet potatoes, celery and rhubarb.
Dessert: Grapefruit, gelatin or peaches, pears. Filbert nuts as desired. Apples or rhubarb sauce sweetened with sugar or maple syrup.
Miscellaneous: Sugar, salt, Wesson Oil, gelatin and maple syrup.

DIET 4.—*Corn and Chicken.*—Gravies and sauces may be thickened only with the flour prescribed, as, for instance, corn-starch in this diet. The corn must not be greased or fried with any butter, lard or any other fat except the one specified, which is Mazola Oil in this diet.

Bread is not permitted yet, unless one wishes to use corn pone, which is made with corn meal and water, or corn meal mush fried in maize oil or bacon fat, which may be eaten with prune or apricot juice or plain sugar syrup.

Illustrative Menu.—Breakfast: Cereal: Corn, fresh or canned; taken with milk if allowed or may be fried with maize oil, salted, or sweetened with sugar and served with pineapple, apricots or prunes; cornflakes are allowed. Bacon, if desired. Molasses preferred to sugar.
Bread: Corn pone as described.
Fruits: Pineapple, apples and prunes, as much as desired.
Drinks: Pineapple or prune juice sweetened with plenty of sugar; tea with milk if allowed.
Dinner and Supper: Soup: Chicken soup with corn, peas, artichokes or asparagus.
Salad: Artichokes, squash, asparagus with pineapple, prunes and apples sprinkled with Mazola Oil.
Meats: Chicken, boiled or fried with bacon fat or Mazola; gravy thickened with cornstarch; bacon as desired.
Bread: Corn pone as described.
Vegetables: Asparagus, squash, peas, rhubarb, artichokes, large helping.
Dessert: Pineapple, gelatin, or prune or apples with filberts. Apple with rhubarb sauce sweetened with sugar or molasses.
Drinks: Same as for breakfast.
Miscellaneous: Sugar, salt, Mazola and molasses.

2. *Alterative Treatment.*—Under the term "alterative" may be classed any remedy that, without producing symptoms of its own, corrects phenomena of disease. Such therapy is most likely to be resorted to in conditions of altered susceptibility such as "allergy," a condition in which with the present ignorance of the essential nature of the altered reactivity of the system one must necessarily blunder along with remedies "until one succeeds."

PRESCRIPTION 1.—*Calcium Lactate*

℞ Calcium lactate ..... 30.00 Gm.
Lactose ..... 30.00 Gm.
Mix, label: Teaspoonful in water every four hours: on arising, at bedtime, and midway between meals.

(*a*) As there is a strong suspicion that abnormal calcium metabolism has something to do with transudative phenomena, the administration of calcium may seem rational. If it is to do any good, it must be administered freely and continued for a considerable time after improvement has set in, for increase of the quantity of ionized calcium in the blood by means of calcium administration is rather difficult to attain and when attained it is but transient. As one calcium salt is as poorly absorbed as another, Calcium Lactate (prescription 1) is the most eligible, because less irritative and not so unpleasant as Calcium Chloride (prescription 2), unless the desire to exert also an acidic influence leads one to prefer the latter. In some cases calcium seems to act very well. It is, however, frequently disappointing.

(*b*) Acids, as they tend to increase the ionization of calcium, might conceivably be useful; e. g., Diluted Hydrochloric Acid 2 cc. given in lemonade, which is to be sipped through a tube during and after meals.

(*c*) Alkali is, curiously enough, more frequently and perhaps more successfully employed. It must be remembered, in possible explanation, that alkali likewise modifies calcium metabolism by causing a tendency to precipitation of the ionized calcium and that in certain

PRESCRIPTION 2.—*Calcium Chloride*

℞ Calcium chloride ..... 15.00 Gm.
Syrup of glycyrrhiza ..... 250.00 cc.
Mix. Label: Tablespoonful in half glassful of water every hour or two until relieved, then teaspoonful four times daily.

cases it might be such precipitation—let us say in the capillary endothelium—that may be desirable modification. While intestinal acidity favors absorption of calcium, its utilization by the tissues may be favored by alkali. It is indirect alkali, such as Potassium Citrate (prescription 3) that should be used for this purpose rather than bicarbonate, which, by its alkalinity, may lessen calcium assimilation. It must be remembered, however, that urticaria may be caused or aggravated by citrate.

PRESCRIPTION 3.—*Potassium Citrate*

℞ Potassium citrate ..... 30.00 Gm.
Syrup of orange ..... 60.00 cc.
Water ..... to make 120.00 cc.
Mix. Label: Teaspoonful in water every two to four hours.

From what has been said, it will be understood that it is entirely rational to use calcium, acid and alkali therapy in succession to each other until the desired result has been secured.

3. *Symptomatic Treatment.*—Lessening vagotonia: (*a*) Epinephrine is almost as valuable a remedy for urticaria as it is for asthma. Solution of Epinephrine Hydrochloride is injected intramuscularly in doses of from 0.5 to 1 cc. It acts promptly, but its benefits are likely to be gone in fifteen or twenty minutes. Massage of the place of injection may reintroduce some of the epinephrine into the circulation and renew the effect. It may be injected as often as required.

(*b*) Ephedrine Sulphate (0.06 Gm. capsules, one three times daily) may lessen the necessity for the frequent injection of epinephrine.

(*c*) Atropine Sulphate in 0.5 to 1 mg. doses, up to tolerance, may accomplish a similar result in a different way.

Analgesics also act as systemic antipruritics. Probably the most useful are: (*a*) Salicylates, e. g., Phenyl Salicylate 0.3 Gm. capsules, of which two may be taken after meals and at bedtime; (*b*) Acetanilid, 0.20 Gm. tablet every two to four hours as required. Opiates are contraindicated in this condition, as they make the itching worse.

PRESCRIPTION 4.—*Phenol Calamine Lotion*

℞ Phenol ..... 2.50 cc.
Calamine lotion ..... 250.00 cc.
Mix. Label: Dab on affected part as frequently as required to avoid scratching.

Local antipruritics must be used as required to prevent scratching. (*a*) Lotions: Sponging the affected part with an alkaline solution (e. g., 4 per cent sodium bicarbonate) as hot as can be borne and followed, without drying, by dusting with talcum powder, is one of the simplest procedures. Sometimes an acid lotion is more effective; e. g., vinegar 1 part to water or alcohol 2 parts. Calamine lotion combines the cooling effect of fluid with the protectant action of a powder application. The addition of 1 per cent of phenol (prescription 4)

increases its antipruritic value. Calamine Liniment, possibly with phenol, might be preferable if the skin is harsh and dry. To prescribe it, one simply substitutes the word "liniment" for "lotion" in prescription 4. Coal Tar lotion may be secured by prescribing Solution of Coal Tar, which is to be diluted 1 : 20 or even 1 : 10 or by ordering it ready for use (prescription 5). This is an intrinsically antipruritic application admissible if there are no lesions due to scratching.

The chief value of any one of these applications is to prevent scratching, which not only brings out new wheals but also inflicts damage to the skin, which on healing provokes renewed itching and scratching, a vicious circle.

(*b*) Baths: These are indicated if the eruption is generalized. A warm alkaline bath is prepared by dissolving a cup of sodium bicarbonate in the bath water. The addition of a demulcent makes this even more

PRESCRIPTION 5.—*Coal Tar Lotion*

℞ Solution of coal tar ..... 12.50 cc.
Water ..... to make 250.00 cc.
Mix. Label: Sponge itching part as required. (Contraindicated if there are many lesions due to scratching.)

soothing, particularly if there is secondary irritation from scratching. For this purpose two or three cupfuls of cornstarch may be stirred in after the sodium bicarbonate. Instead of the cornstarch, one may use bran or oatmeal, boiled to a soft consistency, placed in a muslin bag and this squeezed out into the bath, the bag to be used also to mop the lesions with. Acid baths, though generally less effective than the alkaline baths, are sometimes useful. They can be prepared by adding a cup or two of vinegar or 15 cc. of hydrochloric acid to the bath. Following the bath, the skin should be patted with a soft towel to remove excess of moisture, not rubbed dry, and dusted with talcum or other powder.

PRESCRIPTION 6.—*Mentholated Talcum*

℞ Menthol ..... 0.25 Gm.
Alcohol ..... 5.00 cc.
Talcum ..... 50.00 Gm.
Mix. Label: Dust freely on itching part.

(*c*) Powders: Sprinkling liberally with an antipruritic powder is sometimes sufficient. A simple one as good perhaps as any, is 0.5 per cent Menthol in Talcum (Prescription 6).

CHRONIC URTICARIA

1. *Causal Treatment.*—It is in chronic cases that a most exhaustive study may be required to determine the fundamental nature of the patient's dyscrasia. Among the means to locate the cause must be included blood examination for syphilis, malaria and leukemia, examination of the stools for parasites, and examination of the urine for hematoporphyrin. Treatment addressed to the underlying disease, arsphenamine if there is syphilis or quinine if there is malaria, may cure an otherwise baffling case. A basal metabolism test may lead to the administration of thyroid with decided benefit. Roentgen and other examinations may lead to the discovery of a pathologic condition in the lungs or in the sinuses. In addition, the diagnostic procedures of allergy (q. v.) may succeed in shedding light on the case, although great caution is necessary in interpreting the results, for in a patient with urticaria any injury to the skin is likely to be followed by a wheal. The foregoing allergy test diets may help in arriving at a diagnosis, although dietary regulations are, as a rule, less successful in chronic urticaria than in the acute form.

2. *Alterative Treatment.*—In chronic urticaria, alterative treatment aims at desensitization. This may be specific, if the exciting cause can be determined and is of such nature as to render exposure to it unavoidable. More commonly it must be nonspecific.

(*a*) Peptone (prescription 7), administered perorally, is no doubt the simplest method of attempting nonspecific desensitization.

PRESCRIPTION 7.—*Peptone Capsules*

℞ Peptone ..... 15.00 Gm.
Divide into thirty capsules.
Label: Take one capsule an hour before meals.

(*b*) Calcium gluconate (10 cc. of 10 per cent solution) injected intravenously every other day, or, indeed, the intravenous injection of almost any other fluid, even of 1 cc. of Distilled Water or of Physiologic Solution of Sodium Chloride, may suffice to induce a "colloidoclastic crisis" in these allergic individuals with their delicate systemic colloid balance, producing a change that may have a satisfactory therapeutic result but that may also be followed by a very disagreeable "reaction" without the desired relief.

(*c*) Autohemotherapy, which consists of injecting into the gluteal muscles from 5 to 10 cc. of the patient's own blood withdrawn just previously from the cubital vein, is another measure of this kind.

(*d*) Typhoid vaccine injected intravenously (see Iritis) is a still more powerful appeal of this kind.

3. *Symptomatic Treatment.*—The symptomatic treatment of chronic urticaria is very much like that found useful in acute urticaria.

ANGIONEUROTIC EDEMA (GIANT URTICARIA)

Angioneurotic edema, a localized form of acute transitory edema, is considered to be a special form of urticaria. The pathology of it is a mere exaggeration of that found in ordinary urticarial lesions. If the swelling occurs in loose tissues, such as those below the eye, few subjective symptoms occur. If tissues that are more bound down are affected, such as those of the hands, the symptoms are quite intense; the patient complains of a feeling of tightness, burning and itching.

Like other allergic conditions, angioneurotic edema runs in families so that it is apt to be found in several related persons. The most important thing to watch for in treating a patient with angioneurotic edema is edema of the glottis. The patient should be warned about the possibility of this dangerous condition occurring at any time in the future. He should be told to seek aid immediately if any symptoms or signs occur in his throat, even though these are very mild and just beginning. He should be warned not to wait, because the swelling comes on very rapidly with possibly disastrous results if not taken care of immediately. The mortality rate in angioneurotic edema is quite high, owing to death from edema of the glottis with strangulation.

Treatment of edema of the glottis consists of intubation of the larynx. Of course, if something more immediate is required and an extreme emergency exists, one is justified in doing a tracheotomy.

The treatment of angioneurotic edema otherwise resolves itself into that used in urticaria. The immediate measures are the same as those used in acute urticaria (q. v.). If the swelling involves a mucosa, an astringent lotion may be used with advantage. For this purpose Solution of Aluminum Subacetate may be used, one part to eight parts of water.

Focal infection, such as in the sinuses, gallbladder or appendix, has apparently been the basis of a goodly number of cases, so that one does well to hunt for these possibilities in all cases of chronic angioneurotic edema.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS.

PAUL NICHOLAS LEECH, Secretary.

DIGITOL-MULFORD (SHARP & DOHME, INC.) REACCEPTED

Digitol-Mulford (Sharp & Dohme, Inc.) has recently been before the Council, since the three year acceptance period for inclusion in New and Nonofficial Remedies has expired; reacceptance of this product has been made by the Council on Pharmacy and Chemistry every three years since its original inclusion in New and Nonofficial Remedies in 1912. There was published a Notice of Judgment (N. J. 22335) in which it was charged that a shipment of Digitol was found to have almost double the potency represented by the company—"Tincture Digitalis U. S. P. Strength." In view of this, pharmacologic assays were made during the spring of 1935.

Specimens of Digitol were purchased from retail drug stores in four widely separated parts of the country and submitted to a well known pharmacologist.

Results: By comparison with the fatal dose of ouabain, 0.0005 mg. per gram, the fatal dose of three specimens of Digitol were 0.0052 cc., 0.0063 cc. and 0.0065 cc. The fatal dose of the fourth specimen, standardized Dec. 22, 1928, was 0.0075 cc.; i. e., about 15 per cent too weak. As the corresponding fatal dose of tincture of digitalis U. S. P. is from 0.0055 cc. to 0.0065 cc. per gram of frog, Digitol was found to be neither weaker nor stronger than the U. S. P. tincture.

In the routine examination of the material for Digitol submitted by Sharp & Dohme, Inc., the labels, carton and circulars were found to be satisfactory. The Council voted that the product be reaccepted for New and Nonofficial Remedies.

HO-MO-SOL NOT ACCEPTABLE FOR N. N. R.

Ho-Mo-Sol, said to be identical with Sanizone, is a solution of sodium hypochlorite and sodium carbonate with a claimed content of 1 per cent available chlorine. Both products are marketed by the Sanox Company of Toledo, Ohio, and the former, proposed for lay distribution, was presented to the Council.

The following is the account of the discovery of Ho-Mo-Sol, as stated in the folder, which is intended for public distribution:

"Long ago the sponsors of HO-MO-SOL sensed the need of a DIFFERENT and a BETTER Antiseptic-Deodorant to effectively replace those previously marketed and accepted only because men of Science had been unsuccessful in perfecting the Germicidal Agent that carried no harsh irritants to the skin and other delicate membranes. "They sought to create a Formula superior in quality to any previously employed—a Germicide that would find employment in all phases of Surgical and other Hospital irrigations, general home and industrial usage, and particularly in the field of Feminine Hygiene—one that left no unsightly stains when applied to cuts or abrasions—in short, a Sanitant and Deodorant of chemical purity and crystal clarity that would effectively assist Nature in healing and cleansing by completely arresting germ growth."

A further statement in the folder is:

"HO-MO-SOL is a Hypo-chlorite embracing an Oxygen-carrying principle hitherto unknown."

It is difficult to understand in what way this formula is superior to the well known standard chlorinated soda solution, and, in fact, no proof of such superiority has been submitted. Hypochlorite solutions are well known under nonproprietary names; there is no warrant for the application of a proprietary name; nor can there be any valid reason for marketing the same product under two different names, each equally noninformative.

The therapeutic claims for Ho-Mo-Sol are exaggerated to an unwarranted degree. The product is recommended in "Athlete's Foot," burns, cuts and abrasions, feminine hygiene, insect bites, poison ivy, prickly heat, sunburn, and as a nasal spray, gargle and mouth wash, and vaginal douche. Comment seems trite that possible errors in self diagnosis among such a widely varied group of indications might lead to grievous or serious misuse of the product in lay hands; this without consideration of whether or not hypochlorite solutions are particularly effective in all the conditions enumerated. Certain it is that, in many instances, other preparations or modes of therapy are, ordinarily, distinctly more efficacious and, therefore, preferable.

A detailed discussion of the fallacies involved in the unstinted use of hypochlorite for many of the recommended conditions would be beyond the scope of this report, but it may at least be said that the habitual or repeated use of 1 per cent solutions of positively charged chlorine can produce a significant degree of local tissue damage; every surgeon is familiar with the chemical débridement accomplished by the Carrel-Dakin routine.

The Council declared Ho-Mo-Sol not acceptable for New and Nonofficial Remedies because it is an unessential modification of a standard hypochlorite solution, marketed under a noninformative, proprietary name and promoted among the laity with therapeutic claims beyond those allowed by the Council in connection with antiseptics.

CORRECTION

Ephedrine Sulphate.—In New and Nonofficial Remedies, 1935, page 203, under the standards for ephedrine sulphate (sixth paragraph, giving the tests for limit of chloride) for "dissolve 0.005 Gm. of ephedrine sulphate . . ." read "dissolve 0.5 Gm. of ephedrine sulphate. . . ."

Committee on Foods

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

RAYMOND HERTWIG, Secretary.

NOT ACCEPTABLE

VELVETEX—BART'S CREAM BREAD

The Bart's Bakery, Inc., Savannah, Ga., submitted to the Committee on Foods "Velvetex—Bart's Cream Bread Sliced," a white bread prepared by the sponge dough method, containing patent flour, water, sucrose, vegetable shortening, powdered skim milk, yeast, sodium chloride, malt extract, a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate, and acid calcium phosphate.

Discussion of Name and Advertising.—The name "Velvetex—Bart's Cream Bread" implies the presence of cream in substantial quantity in the baking formula, sufficient to give the bread qualities and nutritional values not possessed by the usual white bread; cream is not an ingredient and skim milk is the only milk product constituent. The name is inappropriate and misleading.

The advertising contains such claims as:

"Not only is Bart's Cream Bread a health food . . . You tune into mealtime healthfulness . . . with Bart's Cream Bread . . . because it's healthful. . . . It's the pure health-giving ingredients in every loaf that gives you the vitamins necessary to develop healthy bodies . . ."

This bread is not a "health food," its ingredients are not "health giving." No one food nor even the entire well balanced diet can give health. Many factors other than foods are necessary for health. The bread does not give "the vitamins necessary to develop healthy bodies" and in fact contains insufficient vitamin content to warrant mention. There is no justification for advertising of this character misinforming the public.

The manufacturer was advised of the recommendations of the Committee but has not demonstrated compliance. This product will therefore not be listed among the Committee's accepted foods.

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SATURDAY, AUGUST 24, 1935

THE SOCIAL SECURITY ACT AND THE MEDICAL PROFESSION

The Social Security Act is now law. Physicians, but only as employers and employees, will be directly interested in its provisions relating to unemployment compensation and taxes imposed on employers and employees. Hospitals and laboratories, operated for the financial benefit of their owners and shareholders, will be interested likewise in those provisions. Physicians who are in need and who are more than 65 years old may have an interest in the provisions of the act for the relief of the aged. Other provisions of the act, however, are of immediate and special interest to all physicians, such as the provisions relating to federal subsidies to enlarge and make more efficient the public health activities of the states and to aid the states in financing certain medical work.

Under the Social Security Act, a federal appropriation of $8,000,000 annually is authorized, for allotment by the Surgeon General of the Public Health Service, with the approval of the Secretary of the Treasury, to states, counties, health districts and other political subdivisions, to aid them in establishing and maintaining adequate public health services. This appropriation is to be supplemented by another, amounting to $2,000,000 annually, to cover the pay, allowances and traveling expenses of personnel of the Public Health Service detailed to cooperate with health authorities of any state and for the investigation of disease and problems of sanitation. Of this supplementary appropriation, the amount available for the investigation of disease and problems of sanitation will obviously be only so much as remains after deducting the authorized expenses of the personnel detailed to state work. The Social Security Act expressly provides, however, that personnel of the Public Health Service shall not be detailed to cooperate with the health authorities of any state except at the express request of the proper authorities of that state.

For allotment to the states by the Secretary of Labor, the Social Security Act authorizes the appropriation of $3,800,000 annually, to assist the states in promoting the health of mothers and children, especially in rural areas and in areas suffering economic distress, but allotments by the secretary can be made only on the basis of plans approved by the chief of the Children's Bureau, and the work in each state must be done by or under the supervision of the state health agency.

In addition to authorizing appropriations for the health activities described, the Social Security Act authorizes annual appropriations to aid states in carrying on certain medical activities.

On the basis of plans approved by the chief of the Children's Bureau, the Secretary of Labor is authorized to distribute annually among the states appropriations of $2,850,000, to enable them to extend and improve, especially in rural areas and in areas suffering from severe economic distress, services for locating crippled children and for providing for children who are crippled or who are suffering from conditions that lead to crippling, medical, surgical and corrective and other services and care, including facilities for diagnosis, hospitals and after-care. No plan for this work is to be approved by the chief of the Children's Bureau unless it is to be administered or supervised by a state agency and provides for cooperation with medical, health, nursing and welfare groups and with organizations and state agencies charged with the administration of state laws providing for vocational rehabilitation of physically handicapped children.

For the blind, the Social Security Act authorizes annual appropriations of $3,000,000, to be expended under the direction of the Social Security Board. These annual appropriations are to be used to aid states to furnish financial assistance to needy individuals who are permanently blind and are to be distributed on the basis of state plans approved by the Social Security Board. Not to exceed $1,500,000 of this appropriation may be used, to the extent that it is matched by an equal amount by the states, to aid in locating blind persons, diagnosing the eye conditions from which they suffer and employing such persons. Plans submitted by the states for activities in this field, in order to permit approval by the Social Security Board, must contain definitions of blindness satisfactory to the board.

From the point of view of hospitals and scientific, educational and charitable institutions and organizations, particular interest attaches to those provisions of the Social Security Act that exempt from liability for taxes corporations, community chests, funds or foundations, organized and operated exclusively for charitable, scientific or educational purposes, no part of the net earnings of which inures to the benefit of any private shareholder or individual. Correlated with this exemption, however, is the provision that excludes from the old-age benefits of the act employees of such corporations, community chests, funds and foundations and permits their exclusion also from the

benefits conferred by state unemployment compensation acts. Whether these exemptions will work to the advantage of the organizations that are supposed to benefit by them can be determined only on the basis of experience, for their employees may demand higher wages or more liberal terms of employment because they are denied the benefits of the act.

For the administration of certain provisions, the Social Security Act creates a new independent federal agency—the Social Security Board. The board is to consist of three members, appointed by the President by and with the advice and consent of the Senate, not more than two members of the board being members of the same political party. Other than this political limitation, the act does not provide specific qualifications for the members of the board. The primary functions of the Social Security Board seem to relate to the administration of the provisions of the act relating to old-age assistance, old-age benefits, unemployment compensation and the relief to the blind. It is charged also, however, with the duty of studying and making recommendations as to the most effective methods of providing economic security through social insurance and as to legislation and matters of administrative policy concerning old-age benefits, unemployment compensation, accident compensation and related subjects. The board must report annually to Congress on the administration of the functions with which it is charged. The absence of a specific reference to health insurance need not be construed as relieving the board of authority to investigate that matter, since health insurance falls within the meaning of the term "social insurance," which the board must investigate and with respect to which it must make recommendations.

Other provisions of the act, no less important than those which have been discussed, are of general interest but have no direct relation to health or medical activities. These include provisions for old-age benefits and grants to the states for old-age assistance, unemployment compensation, aid to dependent children, child welfare services and vocational rehabilitation, and pensions for Indians. The act imposes a graduated and increasing income tax on the wages of employees, to be paid by the employees themselves, and graduated and increasing excise taxes on employers, based on the wages paid employees but to be paid by employers.

The Social Security Act is designed to work a revolution in the social and political relations of the people and of the several states to the federal government. To what extent it is constitutional and to what extent unconstitutional is a question that THE JOURNAL cannot decide. Fortunately, it is not called on to do so. The sooner the question is decided by the courts, however, the better it will be for all concerned. In carrying out the provisions of the act in the fields of medicine and public health, the officers charged with that duty are certain to find themselves handicapped by the scarcity of competent skilled and experienced assistants and workers in practically every grade of service called for. But the law is now an actuality and the medical profession may be confidently expected to do its part toward carrying it into effect.

PASTEURIZATION OF CERTIFIED MILK

A significant development of interest to physicians as well as to all consumers of milk took place at the annual meeting of the Certified Milk Producers Association of America, meeting jointly with the American Association of Medical Milk Commissions at Atlantic City at the time of the annual session of the American Medical Association. A symposium was presented under the title "The Next Step in the Progress of Certified Milk." This subject, which anticipated permissive pasteurization of certified milk, was discussed from various points of view by a municipal milk inspector, a secretary of a medical milk commission, a metropolitan health commissioner, a state health officer, a representative of the United States Public Health Service and representatives of the medical profession, educators and the public. The outcome of the meeting was the adoption of a resolution [1] by which pasteurization of certified milk was endorsed but such pasteurization was not made mandatory.

The medical profession has long been interested in the purity and safety of milk purveyed to the public. Medical milk commissions sponsored by numerous local medical societies were the creation of the medical profession, stimulated by its interest in safe milk for baby feeding. The American Medical Association, through a resolution [2] adopted at Portland, Ore., in 1929, supported the efforts of public health authorities to provide safe milk for human consumption. This resolution by implication endorses pasteurization, which has been strongly favored by the American Public Health Association [3] and the Conference of State and Provincial Health Authorities of North America.[4] Direct endorsement of pasteurization is embodied in a decision of the American Medical Association Committee on Foods.[5] The sponsorship by the medical profession of raw certified milk on the one hand and pasteurized milk on the other was not inconsistent. The value of certified milk has been great, even to those who have never used certified milk. Through the experience developed by methods of certification, the general level of sanitation in milk production has been raised. Producers of certified milk have furnished invaluable leadership in the dairy industry. At the same time the

1. Minutes, Annual Conference, American Association of Medical Milk Commissions and the Certified Milk Producers of America, Inc., 1935.
2. Resolution on Insuring Safety of Milk, Proceedings, House of Delegates, American Medical Association, 1929, p. 40.
3. Resolution Regarding Pasteurization of Milk, Am. J. Pub. Health, December 1924, p. 1069.
4. Proceedings, 49th annual meeting, Conference of State and Provincial Health Authorities of North America, 1934, p. 69.
5. The Pasteurization of Milk, General Decisions on Foods and Food Advertising, Committee on Foods of the American Medical Association, March 1935, p. 33.

necessarily high cost of certified milk, which rendered it inaccessible to most consumers, made necessary the availability of a supply of milk that could be relied on for safety and yet could be supplied at much less expense. Pasteurization furnished the answer to the latter need. Now that the producers of certified milk and the medical milk commissions have adopted permissive pasteurization, there should be benefit to all interested groups. Physicians desiring the highest quality of pasteurized milk for their patients will be able to prescribe pasteurized certified milk; producers of certified milk will be able to offer their customers a pasteurized product; public health authorities will be aided in their program of universal pasteurization, and milk consumers will have a wider choice among desirable milk supplies.

THE PATHOGENESIS OF GOUT

Although the association of gout with a disturbance of purine metabolism has been known for a long time, this relationship has recently become the subject of further investigation. Hench and his co-workers,[1] who compared 100 cases each of gout, rheumatic fever and infectious arthritis, point out that the first difficulty encountered in the study of gout is the correct diagnosis. The criteria for the diagnosis of gout in their study were a history of joint disease together with 5 mg. or more of uric acid in each hundred cubic centimeters of blood or in tophi or both. According to these observers the clinical course of gout differs from the other disorders in that it is marked by paroxysmal and intermittent attacks associated with complete remissions before the stage of chronic gout is reached. The appearance of the objective signs of gout is so inconsistent and may be so delayed that the characteristic clinical history often affords the earliest basis for the differential diagnosis. Another difficulty in making a satisfactory diagnosis is the question of the reliability of the methods of uric acid estimation and the significance of high values sometimes found apart from gout.[2] Obviously a necessary preliminary to the study of gout is a redefinition and the establishment of recognized principles of diagnosis in doubtful cases.

It is encouraging to note the point of view expressed in three recent studies. Talbott, Jacobson and Oberg[3] investigated the electrolyte balance in two cases during various phases of acute gout. One of the patients was under observation for twenty-two months, during which time he had fifty attacks of acute gout, twenty-one of which occurred while he was on a metabolic regimen. It was found that a diuresis began before any clinical or subjective evidence of gout became manifest and that a negative sodium and chloride balance accompanied the diuresis. Coincident with the diuresis there was an increased excretion of potassium, calcium, ammonia, titratable acid, phosphate and urate. A diuresis from transient disturbance of purine metabolism was not excluded. Certain purine bodies are known to possess a diuretic action, and one or more of these might be formed in sufficient amounts before the attack of gout to produce an increased urinary output. This explanation would associate the diuresis intimately with the generally assumed pathogenesis of the disease. They conclude, however, that the metabolic processes associated with acute gout are not adequately defined by a description of uric acid metabolism alone.

In another series of studies of gout,[4] diets high in fat were administered to four gouty patients. In two patients such extreme pain developed that discontinuance of the diet was necessary. In the two other patients the diets were taken for fairly long periods and in their blood the amount of uric acid was markedly higher than it had been at first. This result resembles that found in nongouty persons. In the gouty patients, however, the return to normal blood uric acid levels following the discontinuance of the high fat diets was delayed as compared with that in normal persons or in other forms of joint disease. Lockie and Hubbard therefore propose the addition of the following test for differentiating gout from various forms of chronic arthritis: "Feed a diet consisting of from 250 to 350 Gm. of fat, 50 Gm. of protein and from 30 to 50 Gm. of carbohydrate for a period of from five to seven days. If, within that time, pain in the joints has developed or if existing mild joint pains have markedly increased in severity, a diagnosis of gout must be carefully considered."

Gudzent,[5] who has long been a student of joint disease, recently observed a patient who had a severe attack of gout every time he took milk, and yet this patient tolerated meat very well. Gudzent reviewed a larger number of patients with gout and reached the conclusion that the acute attack has no connection with sudden deposits of uric acid but is an allergic reaction to a gout toxin. A number of such patients, and those with certain other forms of rheumatism, reacted to skin tests with fish, eggs, milk and other substances with wheal formation, and abstinence from these foods resulted in improvement.

Just what part these studies will play in elucidating the gout problem is uncertain. It is generally known that what is called gout is not a rare condition and that it is possibly increasing in frequency. With the refinements in technic in the study of metabolites, diet and allergic diagnosis, the knowledge of so-called gout should rapidly advance.

1. Hench, P. S.; Vanzant, Frances R., and Nomland, R.: Basis for the Early Differential Diagnosis of Gout: A Clinical Comparison of One Hundred Cases Each of Rheumatic Fever, Infectious Arthritis and Gout, Collected Papers of the Mayo Clinic **20**: 790, 1928.
2. Jordan, E. P., and Gaston, Dorothy: Blood Uric Acid in Disease, J. Clin. Investigation **11**: 747 (July) 1932.
3. Talbott, J. H.; Jacobson, B. M., and Oberg, S. A.: The Electrolyte Balance in Acute Gout, J. Clin. Investigation **14**: 411 (July) 1935.
4. Lockie, L. M., and Hubbard, R. S.: Gout, J. A. M. A. **104**: 2072 (June 8) 1935.
5. Gudzent, F.: Testung und Heilbehandlung von Rheumatismus und Gicht mit spezifischen Allergenen, Deutsche med. Wchnschr. **61**: 901 (June 7) 1935.

Current Comment

SKIN IRRITANTS IN ADHESIVE PLASTER

The occurrence of skin reactions following the use of adhesive plaster is by no means uncommon; indeed, the statement has been made that approximately 1 per cent of all normal individuals show the phenomenon. According to the current opinion, two types of reactions may occur. One is simply the result of mechanical trauma by the adhesive plaster and it disappears within a short time after the removal of the plaster. The other type of reaction is a true allergic response to substances present in the adhesive base. Such reactions often increase in severity after removal of the plaster and may persist for many days. Obviously, little can be done to decrease the incidence of the reactions due to tissue trauma; however, the occurrence of the allergic manifestations might be lessened if the nature of the irritating substances were known. A recent investigation on this problem [1] has yielded interesting information. The effects of the various constituents of several different makes of adhesive plaster were determined in twenty-one subjects who had previously been shown to react to the mixture of substances present in the original tape. Eleven ingredients, namely, three kinds of rubber, pine wood rosin, "Burgundy" pitch (a mixture of resins), olibanum (a gum resin), beeswax, zinc oxide, wool fat, starch and orris root, were tested. They were applied to the skin of the arm or the back. A large number of skin reactions resulted from the application of rosin, "Burgundy" pitch, and the smoke-cured wild rubber. Reactions to the other constituents were fewer and less pronounced. Therefore it appears that the substances responsible for the allergic reactions are chiefly the resins and the wild rubber. These observations should stimulate research in the industries for the purpose of finding nonirritating types of resins and rubber to replace those now used in the manufacture of adhesive plasters.

Association News

NEW A. M. A. RADIO PROGRAM

Beginning October 1 at 5 p. m. eastern standard time (4 o'clock central standard time, 3 o'clock mountain time) the American Medical Association with the cooperation of the National Broadcasting Company will begin a new series of programs under the same title, "Your Health," that has previously been used for the National Broadcasting Company broadcasts. This series will differ radically from any programs which the American Medical Association has ever broadcast before. Instead of fifteen minute talks, the program will be thirty minutes in length and will consist of vivid dramatizations of medical emergencies and how they are met. Into each program will be woven a short talk by Dr. Morris Fishbein or Dr. W. W. Bauer emphasizing the points illustrated in the dramatizations. Incidental music will accompany the programs. Scripts and production are being provided by the National Broadcasting Company under the supervision of the American Medical Association. Further announcements will appear in THE JOURNAL and in *Hygeia* and will be furnished to state medical journals and county bulletins.

1. Schwartz, Louis, and Peck, S. M.: The Irritants in Adhesive Plaster, Pub. Health Rep. **50**: 811 (June 14) 1935.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

New Requirements for Foreign Medical Graduates.—The California State Board of Medical Examiners announces that after September 14 graduates of foreign medical colleges must show the following requirements, in addition to those contained in the standard application for a license to practice medicine in California:

1. A license to practice medicine and/or surgery in the country wherein is located the medical school which granted them their diploma.
2. One year internship served in an approved hospital in the United States after fulfilment of condition number 1, or
3. Completion of the senior course in an approved medical school in the United States in lieu of requirement number 2.

Immunization Campaign.—A six weeks campaign for immunization against diphtheria and smallpox will be opened in San Francisco, August 26, under the auspices of the county medical society and the department of health. After school opens each child who does not have a positive record of immunization will receive a circular addressed to his parent stressing the importance of this procedure and urging him to consult the family physician. The health department will furnish postcards to physicians for reporting the completion of each immunization and vaccination. Physicians will follow up their own patients for return appointments for injections of toxoid and vaccination but will send back to the health department the cards of those who fail to return after four weeks. Physicians have agreed to give the treatments free to those who cannot pay, the department to furnish the serum without charge through distribution centers.

COLORADO

State Medical Meeting at Estes Park.—The sixty-fifth annual session of the Colorado State Medical Society will be held at the Stanley Hotels, Estes Park, September 4-7, under the presidency of Dr. Nicholas A. Madler, Greeley. Out-of-state speakers will include Drs. Edwin P. Sloan, Bloomington, Ill., on "Diseases and Dysfunctions of the Thyroid Gland"; Rosco G. Leland, Chicago, "Changes Confronting Modern Medicine"; Joseph R. Plank, New Orleans, "Postoperative Treatment Based on Physiologic Principles," and Emsley T. Johnson, Kansas City, Mo., "Liver Damage Due to Synthetic Drugs, with Clinical, Postmortem and Experimental Studies." Dr. Austin A. Hayden, Chicago, will show a motion picture of the activities of the American Medical Association. Other speakers on the program will include the following physicians:

Harry L. Baum, Denver, Treatment of Various Streptococcic Infections by Means of Human Convalescent Serum.
Ralph H. Verploeg, Denver, Immune Blood Serum in Treatment of Measles, Scarlet Fever and Septicemia.
Osgoode S. Philpott, Denver, Use of Serums in Treatment of Erysipelas.
Charles O. Giese, Colorado Springs, Diagnosis of Cancer of the Lung.
Philip Work, Denver, Nonoperative Care of Head Injuries.
Joseph E. A. Connell, Denver, Surgery in Severe Head Injuries.
Robert M. Lee, Fort Collins, So-Called Subdeltoid Bursitis.
George A. Unfug, Pueblo, The Painful Shoulder: X-Ray Interpretation.
Thomas D. Cunningham and John C. Mendenhall, Denver, The General Practitioner and Allergy.
Duval Prey, Denver, Newer Concepts in the Treatment of Furunculosis.
Gerald M. Frumess, Denver, Scope and Limitations of the Term "Eczema."
William M. Bane, Denver, Modern Treatment of Convergent Strabismus.
Lawrence D. Dickey, Fort Collins, Elliott Treatment in Pelvic Inflammations and Dysmenorrhea.
Thomas E. Carmody, Denver, Relation of Oral Pathology to General Disease.
Duane F. Hartshorn, Fort Collins, Better Psychiatry by the General Practitioner.

There will be symposiums on chronic arthritis, in which Drs. Thaddeus P. Sears, Constantine F. Kemper, Kenneth D. A. Allen, John G. Ryan and Charles E. Sevier, all of Denver, will participate, and one on hematuria, presented by members of the Denver Urological Society. There will be two clinical pathologic conferences. The annual golf tournament will be held at the Estes Park Country Club, Friday. A new feature of the program this year is the "social hour," held from 5 to 6 p. m. each day. Thursday evening there will be a stag smoker at the Estes Park Chalets.

IDAHO

Personal. — Dr. Kenneth H. Collins, Craigmont, has been appointed physician and health officer of Lewis County, succeeding Dr. Eli Taylor, Nez Perce, resigned.

Society News.—The Panhandle Medical Association was organized at a meeting in Spirit Lake, July 15; Dr. John W. Schori, Spirit Lake, was elected president, and Dr. Alexander Barclay, Coeur d'Alene, secretary. This meeting followed a heart clinic held in the afternoon at Spirit Lake Hospital, under the auspices of the Kootenai County Medical Society, and a banquet at the Spirit Lake Hotel. Dr. George H. Anderson, Spokane, conducted the clinic, with the assistance of Dr. Arthur Betts. The new society will hold monthly meetings; membership is open to members of the state medical society in good standing.

ILLINOIS

New Standards for Milk Pasteurization.—Principal features of the recently revised minimum sanitary requirements of milk are announced by the state department of health as follows:

1. The short time-high temperature method of pasteurization is legalized. This method requires that milk be heated to not less than 160 F. and held at that temperature for not less than fifteen seconds.
2. Plans for contemplated pasteurization plants must be submitted to the state department of public health and plants must be approved and a certificate of approval issued before pasteurized milk can be legally sold or distributed.
3. Pasteurized milk must not be delivered to consumers in any container except that in which it left the pasteurization plant. This makes illegal the retailing of dipped milk bought in bulk from pasteurizing plants and sold as a pasteurized product. Hotels and restaurants that serve milk to customers are considered consumers under the law.
4. The state department of health is required to set up and enforce the minimum sanitary requirements for down-state pasteurization plants.
5. Representatives of the department are permitted to enter and inspect any pasteurization plant at any time.

The new standards eliminate the requirement of filtering milk prior to pasteurization and prohibit filtration through cloth or wire after pasteurization. They also require the heating of foam on milk in the pasteurizing vaults to pasteurization temperatures.

Chicago

Society News.—Dr. Harold O. Jones was chosen president-elect of the Chicago Gynecological Society at the annual meeting, June 7, and Dr. Edward L. Cornell was installed as president.

KANSAS

Personal.—Dr. Clay E. Coburn, Kansas City, was elected president of the Kansas State Board of Health at Topeka, June 28.——Dr. Murray C. Eddy, Hays, has been named health officer of Ellis County.

Society News.—Care of the indigent was discussed by Dr. Forrest L. Loveland and Clarence G. Munns, executive secretary, Kansas Medical Society, both of Topeka, before a meeting of the Osborne County Medical Society recently. These speakers presented the same subject before the Reno County Medical Society in Hutchinson, July 18.——Speakers before the Rush-Ness County Medical Society and the Rush-Ness Public Health Council in Ness City, June 25, included Dr. Murray C. Eddy, Hays, on "Intestinal Obstruction."—— Dr. John N. Sherman, Chanute, was chosen president of the Southeast Kansas Medical Society at a meeting in Pittsburgh in June.——Speakers before the Tri-County Medical Society (Barber, Harper and Kingman counties), included Drs. Albert R. Hatcher, Wellington, on appendicitis, and Fred J. McEwen, Wichita, the irregular heart.

LOUISIANA

Tulane Celebrates Centennial. — Tulane University of Louisiana observed its centennial anniversary in connection with its commencement, June 12. Coincident with this celebration were the special exercises of the medical department, organized in 1834 as the Medical College of Louisiana. The medical program was made up of special clinics, ward rounds and addresses by members of the faculty, June 11, and in the evening the alumni banquet was held. The program, June 12, included the following speakers:

Dr. Rudolph Matas, professor of general and clinical surgery emeritus at the school, Contributions of Louisiana to the Surgery of the Blood Vessels.
Dr. John M. T. Finney, professor emeritus of surgery, Johns Hopkins University School of Medicine, Baltimore, Reminiscences of the Progress of Surgery During the Last Fifty Years.
Dr. George H. Whipple, Rochester, N. Y., dean, University of Rochester School of Medicine, The Production and Storage of Blood Serum Proteins and Hemoglobin.
Dr. James M. Mason, Birmingham, Ala., A Series of Arteriovenous Aneurysms.

Dr. Finney delivered the commencement address on "Medical Progress During the Past Fifty Years." The honorary degree of doctor of science was conferred on Dr. Mason, and that of doctor of laws on Drs. Whipple and Finney. The first lecture at the school was given on the first Monday in January 1835 and the first class graduated in 1835. The institution became the University of Louisiana Medical Department in 1847 and the Tulane University of Louisiana Medical Department in 1884. Its name was changed in 1913 to Tulane University of Louisiana School of Medicine.

MASSACHUSETTS

Personal. — Dr. Richard P. Strong, professor of tropical medicine, Harvard Medical School, delivered the Maiben lecture in medicine before the American Association for the Advancement of Science, Minneapolis, June 25; his subject was "The Importance of Ecology in Relation to Disease."—— Dr. Riley H. Guthrie, formerly on the staff of the Monson State Hospital, Palmer, has been appointed assistant commissioner of the state department of mental diseases.

Changes at Boston University.—Announcement has been made recently of the following changes in the faculty of Boston University School of Medicine:

PROMOTIONS

Dr. Leroy M. S. Miner, to be professor of stomatology.
Dr. Edwin W. Smith, professor of obstetrics.
Dr. Burnham S. Walker, professor of biochemistry.
Dr. Clarence Wesley Sewall, associate professor of obstetrics.
Fredrick F. Yonkman, Ph.D., associate professor of pharmacology.
William C. Boyd, Ph.D., assistant professor of biochemistry.
Dr. John C. V. Fisher, assistant professor of obstetrics.

APPOINTMENTS

Richard H. Norton, D.M.D., assistant professor of stomatology.
Dr. Phillips L. Boyd, assistant in anatomy.
Dr. Welman B. Christie, assistant in surgery.
Dr. Lucian Curtis Foye, assistant in pediatrics.
Dr. Thomas R. Mansfield, assistant in surgery.
Dr. Anthony Macaluso, assistant in ophthalmology.
Dr. Barnett H. Rosenfield, assistant in gynecology.
Dr. Carl E. Trapp, assistant in neurology.

MICHIGAN

Wayne County's Golf Tournament.—The Wayne County Medical Society, Detroit, will hold its sixth annual golf tournament at the Oakland Hills Country Club, August 28. The prizes include a number of five and ten dollar checks and purchase orders.

Hospital News.—The state administrative board has authorized immediate construction of a tuberculosis sanatorium in Gaylord, to cost $250,000.——An arthritis clinic was recently organized at the University of Michigan Hospital, Ann Arbor; patients may be referred to this clinic for consultation.

Personal. — Dr. Thomas E. Gibson, Mount Pleasant, has been appointed health officer of Genesee County, succeeding Dr. Leslie A. Lambert, Flint, who resigned.——Dr. Duncan A. Cameron observed the completion of fifty years' service in Alpena, July 19.——Dr. Floyd R. Town, who recently resigned as health officer of Jackson after sixteen years' service to become health commissioner of Isabella County, was the guest of honor at a dinner given by members of the health department staff, July 13.——Dr. Edward A. Schilz, Grand Ledge, has been appointed a member of the state council of health to succeed Dr. William E. McNamara, Lansing, and U. G. Rickert, D.D.S., Ann Arbor, to succeed the late Chalmers J. Lyons, D.D.S.

Dr. Patten Appointed Professor of Anatomy.—Bradley M. Patten, Ph.D., assistant director of medical sciences of the Rockefeller Foundation, has been appointed professor of anatomy and director of the anatomic laboratories of the University of Michigan Medical School, Ann Arbor, succeeding Dr. Gotthelf Carl Huber, who died last December. Forty-six years of age, Dr. Patten received his degree in doctor of philosophy from Harvard University in 1914. He was assistant in zoology at Harvard from 1912 to 1914, going in the latter year to Western Reserve University Medical School, Cleveland, as instructor in histology and embryology. He advanced through the teaching ranks until he became associate professor in 1921, and continued in this capacity until 1934, when he was appointed assistant director for medical sciences of the Rockefeller Foundation. He has written books on embryology, two of which are widely used textbooks, and contributed to zoological and medical journals. His investigations have been concerned chiefly with the development of the heart, the initiation of the heart beat and the changes of the vascular system at birth.

MINNESOTA

Hospital News. — The new $250,000 Indian tuberculosis hospital constructed by the federal government adjacent to the state hospital at Walker has been opened for patients, according to the *Journal-Lancet.*

Society News.—*Minnesota Medicine* announces the organization of the Dakota County Medical Society. Dr. L. D. Peck, Hastings, was chosen president. The new society is the thirty-fourth component of the state organization.

Layman Abortionist Sentenced to Four Years.—Peter H. Nellessen, St. Paul, 64 years of age, was sentenced to four years at hard labor at Stillwater, July 25, following a plea of guilty to a charge of performing an abortion. The state board of medical examiners reports that Nellessen, formerly for eight years a male nurse at the Soldiers' Home at Minnehaha Falls, had been engaged in performing criminal abortions, according to his own statement, over a period of forty years. He stated that he had performed about 100 abortions during the past year. His arrest followed the discovery of a grave in the back yard of a home in St. Paul where an abortion had been performed on a sixteen year old girl.

MISSISSIPPI

No Enrolment of Freshmen.—The board of trustees of the University of Mississippi adopted a resolution, July 18, instructing the school of medicine not to enroll a first year class for the session 1935-1936. This school was dropped from the approved list of the Council on Medical Education and Hospitals, July 1, 1934, without prejudice to the students then enrolled.

New County Health Officers.—Appointment of the following physicians as health officers of the counties indicated is announced:

W. S. Martin, Carthage, Leake County.
William A. McMahen, Union, Newton County.
Albert P. Alexander, Como, Panola County.
George Lacey Biles, Sumner, Tallahatchie County.
Homer B. Watkins, Noxapater, Winston County.
Frank L. McGahey, Calhoun City, Calhoun County.

NEW YORK

Society News. — Speakers at a meeting of the Steuben County Medical Society, Bath, June 13, were Drs. Heywood H. Hopkins, Rochester, on "Low Back Pains"; Joseph Boch, Burlington, Vt., "Bronchial Asthma Differentiated from Cardiac Asthma," and Valentine Uhjely, "Influence of Emotions on Metabolism."

New York City

Personal.—Six physicians were made honorary surgeons in the police department July 18. They were Drs. Erastus M. Hudson, Fred S. Dunn, David J. Kaliski, Harold D. Meeker, Andrew M. Gillen and John J. Cahill. There are now sixty-three honorary surgeons in the department. Dr. Joseph W. Miller was recently reappointed.——Dr. Simon R. Blatteis has been appointed chief of the department of medicine at the Jewish Hospital of Brooklyn.

Approved Clinical Laboratories. — Nearly 200 clinical laboratories operating under permit of the department of health are listed in a recent bulletin of the department. The list includes private laboratories, those in voluntary, private and proprietary hospitals doing work for other than hospital patients. It gives the name of the director, address of each laboratory and the type of work each is authorized to do. Laboratory permits are issued for one year.

Annual Reports of Hospitals.—The Society of the New York Hospital reported recently that its net deficit for 1934 was $756,455, which was $178,701 less than the deficit for 1933. The operating expenditure was given as $2,390,697, an increase of 5.5 per cent over 1933 and the operating income, exclusive of investment, was $1,337,878, an increase of 23 per cent. A total of 64,101 patients was cared for, an increase of more than 12,000.——Mount Sinai Hospital reported that 14,762 patients were treated in 1934, compared with 14,335 in 1933; in the outpatient department 319,003 were treated as compared with 289,649 the previous year. Expenditures amounted to $1,790,376.93, of which $216,316.47 could not be covered by receipts applicable to current expenses.

A Campaign Against Noise.—A concentrated attack on the din of New York will be made, it was announced August 11. Mayor La Guardia, acting on the evidence furnished by an eighteen months survey made at his request, has ordered police to put on a special campaign against night noise during October. The motorcycle and traffic squads will turn their attention in November to day noises. Persons who blow automobile horns needlessly, apartment dwellers who run their radios at high pitch and shipping concerns that use trucks with solid tires will be warned to moderate their noise-producing apparatus. By December 1 the mayor hopes to have antinoise laws drafted and offenders will be arrested. Noises made by apparatus belonging to the city will also be dulled. Fire and police cars will use their sirens only when making calls, not when returning to stations. Muffling devices will be placed on the trucks of the sanitation department until they can be replaced with noiseless equipment. A test made, August 13, with a noise meter showed that certain spots designated as the noisiest in the city in a survey in 1930 have changed little in the interim. Manhattan Bridge at Canal Street and the Bowery was found to be the noisiest spot in both surveys, with Herald Square and Times Square coming close behind. The general trend of intensity was downward, however.

NORTH CAROLINA

Society News.—Dr. David L. Beers, Asheville, addressed the Buncombe County Medical Society, July 15, on "Circulatory Failure."——At a meeting of the Wake County Medical Society, Wake Forest, July 11, Drs. Herbert M. Vann, George C. Mackie, Edward S. King and Coy C. Carpenter presented a symposium on the kidneys.

Symposium on Poliomyelitis. — The Fourth District Medical Society met at Rocky Mount, July 12, to hear a symposium on poliomyelitis presented by Drs. William Lloyd Aycock, Boston; Alexander G. Gilliam of the U. S. Public Health Service; Joseph C. Knox, Raleigh, state epidemiologist; Carl V. Reynolds, state health officer, and John H. Hamilton, Raleigh, head of the state laboratory.

Advisory Board on Workmen's Compensation.—Governor Ehringhaus has appointed an advisory medical committee to the state industrial commission in accordance with an amendment to the state workmen's compensation law making occupational diseases compensable. Dr. Samuel B. McPheeters, Charlotte, is chairman, and Drs. John Donnelly, Huntersville, and Gibbons W. Murphy, Asheville, are the other members.

NORTH DAKOTA

Personal.—Dr. Ira D. Clark, Fargo, has been appointed to the staff of the Grafton State School, an institution for the mentally deficient, to succeed Dr. Arthur S. Needles, who resigned. Dr. Mary E. W. Soules, Dickinson, was added to the staff as physician for women and children.

OHIO

Floods Cause Emergent Health Situation. — A critical health situation developed in Belmont County following torrential rains July 4. All water supplies, derived from 840 shallow dug wells, were contaminated by the flood waters, which had swept away sanitary facilities. There were four cases of typhoid in the area at the time the flood came. The county has not had a health commissioner since April 1934. When the emergency arose, the county sanitary inspector was empowered by the county board of health to handle the situation, but he had no funds or personnel, *Ohio Health News* reports. Two representatives of the state board of health went to Belmont County with typhoid vaccine. The sanitarian had begun chlorination of wells, distributed instructions against using well water and arranged with physicians to administer typhoid vaccine. Since their visit it has been reported that 1,500 persons have been inoculated and all wells have been chlorinated.

PENNSYLVANIA

Society News.—Dr. Frank H. Lahey, Boston, addressed the Harrisburg Academy of Medicine, June 18, on exophthalmic goiter.——A symposium on syphilis was presented at a meeting of the Dauphin County Medical Society, Harrisburg, June 4, by Drs. Walter D. Hawkins, Robert Denison and Louis W. Wright.——Dr. Jesse O. Arnold, Philadelphia, addressed the Fayette County Medical Society, Uniontown, August 1, on "Heat Therapy—Indications and Methods of Application."——Dr. Henry Harold Gelfand, New York, addressed the Wayne County Medical Society, Honesdale, July 18, on "Hay Fever: Present-Day Concepts, Diagnosis and Treatment."

Philadelphia

Children Immunized.—Approximately 9,000 children under 6 years old were immunized against diphtheria in a campaign sponsored by the Philadelphia Department of Public Health, June 3-21. Alum-precipitated toxoid in one dose was used. It is estimated that 50 per cent of the children under school age and 75 per cent of the school children have now been immunized. In the last ten years the death rate from diphtheria in Philadelphia has been reduced from 16.10 per hundred thousand of population to 1.09.

SOUTH CAROLINA

Society News.—Dr. Carlos I. Green, Orangeburg, addressed the Edisto Medical Society, June 6, on "Differential Diagnosis of Appendicitis, Salpingitis and Pyelitis."——Drs. Walter J. Bristol and Benjamin Rubinowitz, Columbia, addressed the Columbia Medical Society, June 10, on the hard of hearing and diagnosis of anorectal diseases, respectively.

Personal.—Drs. Nathaniel B. Heyward, Columbia, and John C. Caldwell, Chester, have been reappointed to the state board of medical examiners for four year terms.——About 500 persons attended a reception in honor of the eightieth birthday of Dr. Henry Boardman Stewart at his home near Fountain Inn, July 21. Dr. Stewart graduated from Emory University School of Medicine, Atlanta, in 1879 and has practiced in the community surrounding his home for fifty-six years.

WEST VIRGINIA

Reorganization of Medical School.—The West Virginia University School of Medicine, Morgantown, which was disapproved by the Council on Medical Education and Hospitals of the American Medical Association in February without prejudice to the students enrolled, is undergoing a complete reorganization. Plans are largely matured and are being carried out as rapidly as possible in an attempt to maintain a school of small size and high standards.

GENERAL

News of Epidemics.—Seven cases of diphtheria were reported from the village of Toland, Pa., July 31.——Nearly 400 members of a Civilian Conservation Corps camp near Clinton, Conn., were quarantined, July 30, when a case of scarlet fever was found in the barracks.——Thirty-two army officers became ill of food poisoning, August 10, after eating cream pie left over from the day before, at Fort Knox, Ky.

Change in Examination Date.—The American Board of Ophthalmology has canceled its examination that was to have been held in Cincinnati, September 17, because of a conflict in dates and announces that the examination will be held in St. Louis, November 18, at the time of the meeting of the Southern Medical Association. Applications must be filed sixty days before the meeting with the secretary, Dr. William H. Wilder, 122 South Michigan Avenue, Chicago.

Society News.—The Mississippi Valley Medical Society, including the states of Iowa, Missouri and Illinois, will hold its first annual session in Quincy, Ill., October 2-4. The plan to organize the society was approved by the Adams County Medical Society and the Marion-Ralls County Medical Society and formal organization took place, April 8, in Quincy. Speakers at the coming session include Drs. Isaac A. Abt, Chicago; William Wayne Babcock, Philadelphia; Hugh Cabot and William C. MacCarty, Rochester, Minn., and Albert Soiland, Los Angeles. In addition, a clinical lecture course will be conducted during the three days.

Sydenstricker Made Scientific Director of Milbank Fund.—Edgar Sydenstricker, statistician of the U. S. Public Service and for several years director of research for the Milbank Fund, has been appointed scientific director for the Milbank Fund. He will be in charge of the scientific work. Mr. Sydenstricker was born in China in 1881 and came to the United States in 1896. He was educated at Washington and Lee University, Johns Hopkins and the University of Chicago. From 1908 to 1915 he served as special investigator in charge of industrial community studies for the U. S. Immigration Comission and the U. S. Comission on Industrial Relations. In 1915 he was appointed statistician to the U. S. Public Health Service and has been statistical consultant since 1928, when he was appointed director of research for the Milbank Fund. In the year 1923-1924 Mr. Sydenstricker served as chief of the service of epidemiologic intelligence and public health statistics for the League of Nations, helping to initiate the statistical work of the International Health Organization.

Medical Bills in Congress.—*Changes in Status:* S. 2047, providing for the general welfare of the Indians of the state of Oklahoma, has been reported to the Senate (Senate Rept. 1232). This bill, among other things, proposes to authorize the erection of additional hospitals for the protection of the health of the Indians of Oklahoma. S. 3334 has been reported to the Senate, providing for the care and treatment of members of the National Guard, Organized Reserves, Reserve Officers' Training Corps and Citizens' Military Training Camps who are injured or contract disease while engaged in military training (Senate Rept. 1231). H. R. 4513 has passed the Senate, authorizing payment of claims for unauthorized emergency treatment rendered to World War veterans. *Bills Introduced:* H. R. 9104, introduced (by request) by Representative Rankin, Mississippi, proposes to establish a permanent medical service in the Veterans' Administration. H. R. 9116, introduced by Representative Rankin, Mississippi, proposes to extend the provisions of veterans' laws and regulations to persons who served in Russia during the World War, and their dependents.

Poliomyelitis Outbreaks.—Troops of the National Guard of the District of Columbia and Virginia have been barred from training in Maryland and Pennsylvania because of the outbreak of infantile paralysis in their home areas, according to newspaper reports, August 13 and 12, respectively. In Virginia, twelve new cases reported to the state health department, August 13, brought the total since July 1 to 391. In North Carolina, where the outbreak seems to have originated, 534 cases of the disease have been reported since the first of the year. During the week end of August 10, 133 new cases of infantile paralysis had been reported to the New York City Health Department. Although this is the largest number of any week since the epidemic of 1931, it was stated, "there is no indication that the disease is assuming epidemic proportions." Dr. Leslie L. Lumsden of the U. S. Public Health Service was in Louisville, Ky., August 12, studying twenty cases of infantile paralysis which had occurred within the past two months. In Massachusetts, one death and sixteen additional cases reported during the week end of August 10 brought the total number of cases to 176.

American Child Health Association Disbands.—At a meeting in New York, August 13, the American Child Health Association voted to discontinue its activities. The aims and purposes for which the association was formed have been in large part accomplished, Dr. Samuel M. Hamill, Philadelphia, president, declared in an address at the meeting, and the expenditure of large sums of money to maintain a separate organization is no longer justified. Dr. Philip Van Ingen, New York, secretary, pointed out in a letter sent to members that there are now few organizations interested in health or the fighting of disease in whose programs the child does not occupy a prominent place. The association was formed in 1923 by a merger of the American Child Hygiene Association and the Child Health Organization of America. Former President Herbert Hoover was president, and vice presidents were Drs. L. Emmett Holt Jr., Baltimore, Livingston Farrand, Ithaca, N. Y., and Thomas D. Wood, New York. Mr. Hoover directed the policies until he went to the White House and has since been honorary president. Dr. Samuel J. Crumbine, New York, has been general executive since 1925.

Malpractice Suits Delayed by Patient's Minority; a Remedy.—The New York Law Revision Commission has under consideration the advisability of recommending that the New York legislature abolish the rule that permits a person to sue at any time before he is 22 years old for damages for alleged malpractice that occurred at any time during his minority. If New York abolishes this rule, it will be easier for other states in which it prevails to do so. Concrete evidence of the injustice arising out of the rule will make it easier to procure its abolition. Prof. Victor Levine, professor of law, Syracuse University College of Law, Syracuse, N. Y., who has been asked by the New York Law Revision Commission to draft a proposed revision of the New York statute of limitations, requests therefore that physicians report to him cases of which they have knowledge in which suits based on alleged malpractice inflicted on minors have been unreasonably postponed, to the detriment of physicians. Doubtless many such cases have been settled out of court or decided in trial courts, without appeal, of which Professor Levine cannot learn except as physicians who have knowledge of the circumstances report them to him.

Death Rates in Large Cities.—The New York City Department of Health has compiled the death rates for 1934 of twenty-eight large cities in the United States with a combined population of 27,417,026, giving comparative figures for various causes of death. The crude death rate for all the cities was 11.42, as compared with 10.95 in 1933. Milwaukee had the lowest death rate, 8.16 per thousand of population; Detroit came second with 8.79. Washington, D. C., had the highest rate, 16.72. Chicago had the lowest infant mortality rate among the five largest cities, 47.7 per thousand live births; San Francisco's, 33.2, was the lowest among the twenty-eight cities, that of New Orleans, 87.1, the highest. Milwaukee also led with the lowest death rate from automobile accidents, 13.7 per hundred thousand of population, and New York City was second, with 15.3. Cincinnati's rate, 43.9, was highest among

automobile fatalities. The general birth rate calculated for all the cities was 14.81 per thousand of population, with San Francisco's the lowest, 10.43, and Washington's, 20.25, the highest. The diabetes death rate varied from 9.7 per hundred thousand in Houston to 41.5 in Boston; the general rate was 28.5. Tuberculosis rates ran from 12.1 in Minneapolis to 106.4 in New Orleans. Louisville, Ky., had the highest death rate from diphtheria, 9 per hundred thousand, and San Francisco the lowest, 0.1.

FOREIGN

British Medical Election.—At the annual representative meeting of the British Medical Association in London, July 19, Sir James W. Barrett, Melbourne, Australia, was elected president of the association for 1935-1936 to take the place of the late Sir Richard R. Stawell, Melbourne. Sir E. Farquhar Buzzard, regius professor of medicine, University of Oxford, was elected president for 1936-1937. The scientific session will be held in Melbourne, beginning September 10.

Personal.—Dr. Edward Mellanby, secretary of the Medical Research Council of England, has been appointed Fullerian professor of physiology at the Royal Institution.——Dr. Karl F. Wenckebach, Vienna, recently received the Karl Ludwig medal presented by the German Society for the Study of the Circulation.——Dr. Arthur Salusbury MacNalty is chief medical officer of the British Ministry of Health and of the Board of Education, succeeding Sir George Newman, who retired in March.

Exposition of Medical Books.—During the month of October there will be an exposition of medical books in Bologna, Italy, under the auspices of the city in connection with a number of medical congresses to be held there. The exposition will be in two parts, ancient books up to the seventeenth century and modern books published since the war. All publishing houses in the world are invited to send their books, which must arrive in Bologna before September 10. The committee on the exposition has its headquarters in the Palazzo d'Accursio, Bologna.

Government Services

New Hospital Beds for Veterans

More than 11,000 new hospital and domiciliary accommodations are to be provided for veterans at a cost of approximately $20,000,000 under the terms of the Deficiency Appropriation Bill, which became a law August 12. Of this number about 8,800 are new and the remainder replacement of existing unsuitable facilities. Nearly 7,000 of the additional accommodations will be for veterans suffering from mental disorders. The Veterans' Administration issued the following list of projects and their estimated costs:

Tuskegee, Ala.: 350, neuropsychiatric, $300,000.
Whipple, Ariz.: 300 replacements, tuberculosis, $676,000.
Los Angeles: 150, neuropsychiatric; 400 domiciliary (350 replacements), $835,000.
Livermore, Calif.: 30 tuberculosis, $75,000.
Fort Lyon, Colorado: 296 neuropsychiatric, $345,000.
Newington, Conn.: administration building, 35 general medical, $80,000.
Bay Pines, Fla.: administration building, 290 general medical; 400 domiciliary, $1,185,000.
Lake City, Fla.: 80 general medical, $150,000.
Atlanta: 80 general medical, $180,000.
Marion, Ind.: 134 replacements, neurospychiatric, $400,000.
Knoxville, Iowa: 300 neuropsychiatric (new boiler plant), $725,000.
Lexington, Ky.: 306 neuropsychiatric, $600,000.
Alexandria, La.: 100 general medical, $100,000.
Togus, Maine: 350 replacements, domiciliary, $350,000.
Perry Point, Md.: 164 neuropsychiatric, $300,000.
Bedford, Mass.: 328 neuropsychiatric, $600,000.
Northampton, Mass.: 200 neuropsychiatric, $250,000.
Custer, Mich.: 164 neuropsychiatric, $300,000.
St. Cloud, Minn.: 328 neuropsychiatric, $600,000.
Biloxi, Miss.: 350 domiciliary, $400,000.
Gulfport, Miss.: 164 neuropsychiatric, $300,000.
Jefferson Barracks, Mo.: 50 general medical beds and other buildings, $195,000.
Lyons, N. J.: 628 neuropsychiatric, $1,200,000.
Batavia, N. Y.: administration building and 35 general medical, $80,000.
Canandaigua, N. Y.: 639 neuropsychiatric, $1,200,000.
Northport, N. Y.: 800 neuropsychiatric, $1,500,000.
Chillicothe, Ohio, 328 neuropsychiatric, $600,000.
Dayton, Ohio: 176 general medical and 750 domiciliary (700 replacements), $1,210,000.
Roseburg, Ore: 350 domiciliary converted to neuropsychiatric, $100,000.
Coatesville, Pa.: 314 neuropsychiatric, $600,000.
Columbia, S. C.: 405 general medical, $430,000.
Hot Springs, S. D.: 100 general medical, $170,000.
Waco, Texas: 164 neuropsychiatric, $300,000.
Hampton, Va.: 500 general medical, replacements, $750,000.
Roanoke, Va.: 492 neuropsychiatric, $900,000.
Milwaukee: 300 replacements, $350,000.
Wisconsin, site undetermined: 236 neuropsychiatric, $944,000.
Cheyenne, Wyo.: 125 tuberculosis; 125 general medical, $750,000.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 27, 1935.

Report of British Medical Association on Immunization

More than a year ago, the British Medical Association appointed a committee consisting mainly of health officers and pathologists to prepare a scheme for informing the public regarding the protection afforded by the various methods now available of immunization against diseases. The committee's report has now been published. It deals with the diseases against which specific immunization may be widely applied—diphtheria, scarlet fever, measles, the typhoids and smallpox.

DIPHTHERIA

The committee states that diphtheria is not less prevalent than formerly but is less fatal. Isolation and sanitary measures have failed to control it, and it accounts for 3,000 deaths annually. Active immunization is confidently advocated. In children under the age of 8 years the preliminary Schick test may be omitted, since the great majority may be assumed to be susceptible, but as a test of success should be performed from one to three months after the immunizing course. For children any of the preparations known as toxoid, toxoid-antitoxin mixture, toxoid-antitoxin floccules and alum toxoid may be safely used, but for adults preference is expressed for toxoid-antitoxin mixture or floccules. On the average, 95 per cent of immunized persons are still Schick negative from three to five years after immunization.

SCARLET FEVER

Scarlet fever still presents difficulties in preventive medicine. The death rate has fallen remarkably, although the incidence has altered little. The Dick test is held to be very reliable. Immunization should at present be reserved for hospital staffs and children in a residential school where an outbreak has occurred. Two methods of immunization are used: 1. In England most workers use weekly or fortnightly injections of 500, 1,000, 5,000, 10,000 and 20,000 skin test doses. 2. In recent years the tendency has been to use a higher dose. In the United States the Dicks and others give doses running up to 80,000 or 100,000. By slow graduation of dose, reactions may be almost entirely avoided. Probably from 2 to 10 per cent of the immunized revert to the Dick-positive state within a year.

MEASLES

Passive immunity to measles can be produced by the use of convalescent serum or blood and by adult serum or blood. It may be used for postponing the danger of infection to a more opportune time or for mitigating the attack. Convalescent serum is the material of choice and should be given in the first five days after exposure for complete protection. Administration between the fifth and ninth days, or half dosage during the first five days, is used for modifying an attack.

TYPHOID

The work of Wright and Leishman during the war resulted in the production of a typhoid vaccine widely and successfully used. In the years that have followed, modifications have been introduced into the technic of manufacture. Saline suspensions have replaced broth emulsions. Work in the department of pathology at the Army Medical College has resulted in the production of a vaccine containing 1,000 million B. typhosus, 750 million each of B. paratyphosus A and B. paratyphosus B in 1 cc. of 0.5 per cent phenolated saline solution. Adults are given 0.5 cc. followed after ten days by 1 cc. Children between 12 and 15 are given half the dose and younger children one

fourth. Reactions are minimized by giving inoculations subcutaneously before the patient goes to bed and by avoiding alcohol.

SMALLPOX

In this country vaccination against smallpox has greatly declined. Exemptions are so easily obtained that their percentage has risen from 5 in 1898 to 47.5 in 1932. On the other hand, only variola minor has been prevalent, with a mortality of only 3 per thousand. The committee holds that the retention of the present vaccination acts, from which exemption is so easily obtained, serves no useful purpose and only arouses opposition to other forms of vaccination. The practice officially recommended to public vaccinators (since 1929 because of the occurrence of vaccination encephalitis) of making only one insertion, instead of the previous four, is likely to result in an earlier loss of immunity.

CONCLUSION

It is extremely unlikely that immunization against each disease, as it becomes practicable, can be made compulsory in this country. The proper course is to inform the public as to what can be achieved by immunization, that it is the controlled application, with infinitesimal risk, of a process that is going on continuously in a hapazard fashion, leaving behind a trail of suffering and death.

Rockefeller Scholars in the United States

The Medical Research Council, on behalf of the Rockefeller Foundation of New York, has made the following award of fellowships tenable in the United States: D. F. Anderson, professor of midwifery and gynecology, Anderson College of Medicine, Glasgow; N. R. Barrett, demonstrator of anatomy and chief assistant to the surgical unit, St. Thomas's Hospital; A. C. P. Campbell, clinical tutor in medicine, Royal Infirmary, Edinburgh, and assistant lecturer in the department of pathology, Edinburgh University; D. H. K. Lee, Sharpey scholar in the department of physiology at University College, London; J. E. A. O'Connell, demonstrator of anatomy, St. Bartholomew's Hospital Medical School; Robert Walmsley, assistant in anatomy, University of Edinburgh.

The Diabetic Association: A Holiday for Diabetic Children

In a previous letter the formation of the Diabetic Association under the presidency of H. G. Wells, the writer, was reported. The association consists of patients with diabetes who have united in order to assist one another with their various experiences and to promote the interests of sufferers from the disease. Its latest activity is the provision of a holiday for diabetic children, a thing peculiarly difficult and in the case of those whose parents are not in comfortable circumstances practically impossible. The Diabetic Association is planning to take a number of children to the country for August. A suitable home has been found in pleasant country about an hour's journey from London and a number of helpers have volunteered their services. A skilled dietitian will be in attendance and a trained nursing staff will administer the treatment under medical supervision. Parents in a position to contribute to the scheme will be expected to do so, but not others.

Immunization Against Influenza

At the congress of the Royal Sanitary Institute, Prof. W. C. Topley, who occupies the chair of bacteriology and immunology at the London School of Tropical Medicine and Hygiene, said that two strains of influenza virus were being propagated in ferrets and mice and that before long it would be possible to immunize effectively against the disease. This would be one of the major victories of preventive medicine. He said that vaccination against a virus disease tended to be far more effective than vaccination against a bacterial disease.

PARIS

(From Our Regular Correspondent)

July 12, 1935.

Unusual Intestinal Infarcts

At the Dec. 19, 1934, meeting of the Société de chirurgie, Raymond Grégoire reported a case of infarct of the small intestine in which the etiology was obscure. Moulonguet was the first to direct attention to a type of infarct in which the mesenteric vessels are not occluded and which he termed "inexplicable infarct." In all, fifteen such cases have been reported. Grégoire's patient was a man 62 years of age who was taken suddenly ill with symptoms of intestinal obstruction. When first seen by Grégoire, the clinical picture was that of shock. The temperature was subnormal, the pulse was almost imperceptible, the extremities were cold, the superficial veins of the legs were distended, and the nails and hands were cyanosed.

On operation, 20 cm. of the lower ileum was found distended, black in some places and greenish in others, with yellowish free fluid in the peritoneal cavity. It was impossible to feel any pulsation in the larger or smaller mesenteric arteries. The veins were distended with dark noncoagulated blood. On account of the patient's poor general condition, resection was deemed inadvisable. A hypodermic injection of 1 mg. of epinephrine was given and immediately the loop of intestine (6 feet long) changed from black to red, the intensity of which color increased after some warm saline solution was poured over the exposed loop of ileum. The radial pulse immediately became perceptible, and the now quite well vascularized loop was replaced and the parietal incision was closed. Uneventful convalescence followed. Grégoire asks what this strange disease can be which gives rise so suddenly to such grave symptoms and yet subsides with equal rapidity.

There is in these cases the same clinical picture of anaphylactic shock that one observes in animals. Laubry and Tzanck maintain that the veins and capillaries of the body form a sort of peripheral motor force, which has its insufficiencies or asystoles the same as does the central motor, or heart, in distributing the blood throughout the body.

Such an asystole of the "peripheral heart" is seen in all severe intestinal infections such as typhoid or cholera, in peritonitis, in acute adrenal insufficiency and in severe nervous or toxic shock. Lumière stated that such a stasis of the capillovenous system is at its maximum in anaphylactic shock. Richet, Faure-Beaulieu and Villaret have observed in animals the distention of the abdominal vessels, especially the portal system. Such a stasis is greatly ameliorated by the administration of epinephrine.

Grégoire believes that such cases as his own can be best explained as being due to some form of anaphylactic shock. Clinically they are characterized by sudden pain, fall in blood pressure, abdominal stasis and hemorrhage from one or several of the viscera. One observes infarcts of the uterus, tubes, ovaries and pancreas to which a similar explanation of anaphylactic shock may be applied.

At the May 1 meeting of the same society, Grégoire and Binet (professor of physiology) reported the results of their work on dogs in attempting to reproduce experimentally an intestinal infarct of the type encountered clinically by Grégoire. Local anesthesia of the abdominal wall was employed instead of a general anesthetic. In the first series a generalized anaphylaxis was produced by injecting from 10 to 15 cc. of horse serum over a period of at least four weeks. A coil of small intestine was brought into the incision and a solution of heterogenous albumin was injected into the mesenteric vessels. The injections into the veins, against the vascular current, were without effect, but those into the veins were followed by a spasm of the vessels, lasting from 30 to 40 seconds but

without the production of an infarct. Injections into the wall of the coil of intestine were followed by the appearance of a round or ringlike plaque, dark blue and rising slightly above the level of the adjacent serosa. In a second series an attempt was made to reproduce the Arthus phenomenon. Injections into the mesenteric vessels failed to yield any information, but those into the intestinal wall were markedly positive. In animals that had not been prepared, four injections of 2 cc. each of horse serum were injected on the anterior and posterior surfaces of the intestine. Eight days later the same coil was isolated and the same technic employed. This was repeated after another eight day interval and was followed by the symptoms of a generalized anaphylaxis. Locally the mesenteric arteries ceased to pulsate and the veins became distended with dark blood. Simultaneously the coil of intestine assumed a violet color and in places became black. Only two or three minutes elapsed between the time the generalized symptoms of anaphylactic shock and the signs of an intestinal infarct appeared. The authors believe that among the causes of "unexplained infarcts" such as Grégoire observed clinically there are a certain number which are due to anaphylactic shock, as their second series of experiments demonstrated. One should suspect such an etiology of intestinal infarct when the symptoms of collapse are the principal feature at the onset. At operation one finds but little mesenteric infiltration and mesenteric vessels that are not occluded. How should one treat such cases? If the vitality of the coil that presents signs of an infarction is still good and if the infarction does not involve too many coils and is recent, every effort should be made to combat the generalized anaphylaxis. It will be recalled that the local evidences of infarction receded rapidly during the operation in Grégoire's case, following the subcutaneous administration of epinephrine. If the exposed coils of intestine do not change in color in spite of all treatment directed against the generalized anaphylaxis, one will be forced to choose between exteriorization and resection of the infarcted portion of the exposed intestine.

Modified Schafer Method of Artificial Respiration

The defects of the Schafer method in cases of asphyxia are pointed out in a paper by Professor Hederer of the French Naval School at Toulon, read at the May 14 meeting of the Académie de médecine. The method suggested must be carried out by two persons instead of one, which is its only disadvantage

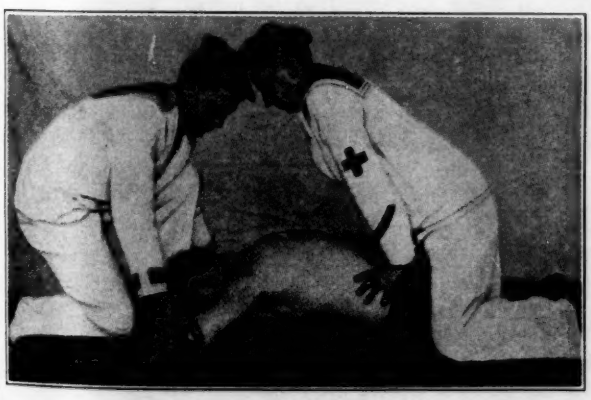

Fig. 1.—Expiration: One assistant exerts pressure over the lower ribs as in the classic Schafer method. The second assistant grasps both elbows preparatory to making respiratory efforts as shown in figure 2.

over the Schafer method, obligatory in France since 1927. In the latter method the individual to whom artificial respiration is being applied lies face downward with the head turned to one side. By compression of the lower ribs, during expiration, an attempt is made to stimulate the diaphragmatic reflex. The criticism which Hederer makes of the Schafer method is that the volume of air entering and leaving the lungs is only about 100 to 150 cc., as compared to the normal volume of 500 cc. and one of 250 to 280 cc. when the Silvester method is used. Another criticism is that the pulmonary circulation is stimulated much less with the Schafer than with the Silvester method. These criticisms are based on laboratory studies in which the two methods were compared. Hederer suggests a method of artificial respiration combining, from a physiologic point of view, the advantages of the Silvester method with the prefer-

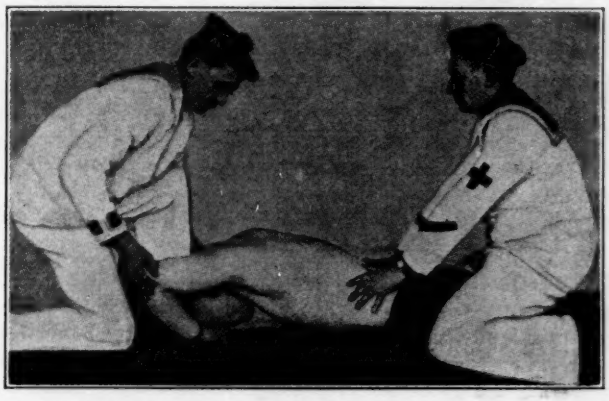

Fig. 2.—Inspiration: As soon as the compression of the lower part of the thorax has been completed by the first assistant, the arms are pulled upward and brought together in the median line by the second assistant, in order to imitate normal inspiration.

able posture of the Schafer method. With the asphyxiated or drowned person in the prone position, one assistant exerts pressure on the last ribs with the fingers of both hands, the thumbs resting near the median line of the back. At regular intervals (Schafer method) expiratory efforts are imitated by pressure on the lower part of the thorax (fig. 1). The second assistant, kneeling at the head of the person to be resuscitated, grasps both elbows and pulls the arms upward without changing the position of the head and hands of the subject. Thus inspiratory and expiratory movements are alternately imparted to the thorax by the two assistants (fig. 2). The volume of air rises from 100 to 150 cc. to 250 to 280 cc. and the intracardiac pressure is greatly increased. It is as easy to teach this method as to teach the Schafer method alone.

Ulcer of Meckel's Diverticulum Diagnosed Before Operation

At the April 10 meeting of the Société de chirurgie, two cases were reported, one by Deton and one by Huard, in which a preoperative diagnosis of peptic ulcer of Meckel's diverticulum was made and confirmed on examination of the specimen. Deton's patient, a youth of 18, had been operated on for appendicitis thirteen months previously by another surgeon. When seen by Deton the chief complaint was pain in the right iliac region and diarrhea. Roentgen examination of the colon about three months later did not reveal anything except a pericecal inflammation. The pain did not subside but seemed to appear about an hour and a half after eating and subsided following the next meal. Severe intestinal hemorrhages then occurred and a diagnosis of ulcer of Meckel's diverticulum was made. At operation a mass the size of a cherry was found on the upper surface of the ileum close to the mesentery and about 60 cm. from the cecum. The coil of ileum with the diverticulum was resected. The specimen showed an epithelial lining of the gastric type and a round ulcer with indurated edges at the junction of the epithelial lining of the diverticulum and that of the ileum. Recovery was uneventful.

Huard was called to see a boy, aged 11 years, who had been taken suddenly ill with colicky abdominal pain and the history of having had several bowel movements containing clots and bright red blood. Palpation revealed slight tenderness a little to the right of the umbilicus. On account of the sudden severe

intestinal hemorrhage without accompanying symptoms, Huard made a diagnosis of bleeding peptic ulcer in a Meckel's diverticulum. Immediate laparotomy revealed a diverticulum the size of an adult thumb, which was resected. An epithelial lining thick and thrown into folds resembling that of the stomach was found. Near the base of the diverticulum was a large ulcer on the floor of which one could see a clot, which, on being detached, was seen to cover an open arteriole, from which the bleeding had its source.

Mondor in the discussion reported having been able to find 120 cases of ulcer of Meckel's diverticulum. Sudden intestinal hemorrhages with or without signs of perforation should always lead one to suspect, especially in children, an ulcer of a Meckel's diverticulum.

BERLIN

(From Our Regular Correspondent)

June 24, 1935.

The German Roentgen Society

The Deutsche Röntgen-Gesellschaft convened in Berlin in April, under the chairmanship of Professor Frik of Berlin and Professor Baensch of Leipzig, to celebrate the fortieth anniversary of the discovery of roentgen rays. The chief topic was "Roentgenology of the Cranium." The Göttingen pathologist G. B. Gruber called attention to the destructive action of chordomas and meningiomas on the adjacent cranial bones; also to the important differences in the action of suprasellar and hypophyseal tumors. Stenvers of Utrecht discussed the changes in the cranial bones, due to brain tumors. Many tumors may be brought out directly in the roentgenogram. Speaking of encephalography, Flügel of Leipzig, after observations on about 1,500 patients, brought out that the method constitutes an indispensable addition to the neurologic examination. More than 10 per cent of the tumor cases had shown clinically no pathognomonic symptoms. The method may be regarded as harmless if it is used conservatively. If the technic of the exposures is suitable (five exposures in various head positions, so that the air dome moves about), a few centimeters of air (at the most, 20) applied by puncture of the cisterna will suffice. Löhr of Magdeburg discussed the changes in the arteriogram of the cranium due to brain tumors. He injected thorium dioxide sol, by way of the exposed carotid artery, into the vessels of the brain in more than 1,000 cases, without a fatality. The contrast medium disappears again completely from the brain. Olivecrona of Stockholm emphasized the importance of the roentgenogram in determining the indications and the operative treatment of brain tumors. If the clinical examination fails, one is nearly always able with the aid of ventriculography to determine the exact position of the tumor. To conclude from the roentgenogram what kind of tumor is involved is only conjecture. The procedure whereby, with a tube in motion, only the parts of a certain plane of an object may be roentgenographed, while the parts of all other layers are suppressed, was discussed. Although not new, it has only in recent years been developed to the extent of becoming practical. This method is important; for example, in the diagnosis of lung conditions.

The so-called subtraction procedure, described by Ziedses des Plantes of Utrecht, consists in preparing two roentgenograms of the same object—one before and one after a certain change; for example, of the cranium before and after arteriography, and covering the second roentgenogram with the diapositive of the first. Then everything lying outside the contrast medium is effaced, so that only the picture of the filled arteries remains, the advantage being that it stands out distinctly.

K. F. Schultze of Berlin spoke on hysterosalpingography, emphasizing its importance in judging of the need and the results of operative sterilization. Roentgenography with a contrast medium reveals better the functional capacity of the fallopian tube than actual inspection in connection with laparotomy. A contrast medium should be applied when palpable changes in the adnexa exist and when a married woman has been sterile for years.

A discussion arose on the treatment of malignant tumors with concentrated fractioned close-up radiation. The progress of high tension safety permits the construction of tubes the anticathode of which can be brought within 3 to 5 cm. of the surface of the skin, or, in the case of the vaginal tube, close up to the parametrium.

During the discussion, the results in the simpler skin cancers, which are of course most easily reached, were appraised less highly by Schinz of Zurich than in certain infiltrating, inoperable and superficial epitheliomas unsuccessfully treated by other methods.

Organization of Blood Donors in Germany

The organization of blood donors is awakening great interest in Germany. The Städtischer Blutspendernachweis, established in the Rudolf Virchow-Krankenhaus in Berlin, has now 128 donors available, five of whom are women. A donor may furnish blood only once a month, and the amount furnished is restricted to 500 cc. The compensation for loss of time or earning power by reason of a transfusion is 15 marks ($6). For purposes of general control each donor is provided with a record card, the entries on which correspond with the entries recorded in the filing cabinet at the blood donors' central. The blood donors' central is in a position to furnish within a short time the donor required, previously examined as to blood group.

Since April 1, 1934, Leipzig also has had a blood donors' central, which was created at the instance of Professor Morawitz and is under his direction. During the first year, 106 blood donors were furnished. Applicants were not accepted unless they were free from all signs of infectious disease, presented at least 80 per cent of hemoglobin and 4,500,000 erythrocytes, also a normal number of leukocytes with a normal distribution (no shift to the left and no eosinophilia); their veins had also to be adapted to blood transfusion. As Dr. Seggel of the Medizinische Klinik in Leipzig has emphasized, it was found necessary to make careful inquiries in regard to the moral reputation of applicants, since in a few donors greed predominated over moral principle, while occasionally a donor was found to be morally unsound. It is emphasized that "only donors of pure Aryan ancestry are accepted." As a rule they are either students or members of the national-socialist party. For each hundred cubic centimeters of blood (or fraction thereof) 5 marks ($2) is paid in Leipzig. The Leipzig krankenkassen do not hesitate to assume these charges. A large percentage of the donors are from the unemployed. In Leipzig the largest amount of blood to be supplied by a donor at one time is ordinarily 400 cc.; only in an emergency may a larger quantity be taken. As a rule, if more than 400 cc. is required, two donors must be summoned. In Leipzig also no donor may be used within a month of a previous transfusion. Not only the qualities of the erythrocytes are tested but also the nature of the blood serum. In Leipzig and in Frankfort-on-Main, donors are reexamined every three months; in Berlin and in Vienna every two months. When reexamined the donor must state in writing, on his word of honor, that in the meantime neither he nor any member of his family has been affected with syphilis or other infectious disease. No examination is made immediately before the transfusion; this responsibility, as with the transfusion itself, rests on the physician in charge of the intervention. The Leipziger Krankenhaus, which has undertaken the task of organizing the blood donors, exacts a fee of 5 marks ($2) to cover the general expense. During the first year of the activities of the Leipzig blood

donors' central, 420 blood transfusions were performed through its mediation. The group distribution of the 106 donors was as follows: group O, 37.7 per cent; group A, 39.6 per cent; group B, 15.1 per cent; group AB, 7.5 per cent. Of the 420 transfusions, 192, or 45.7 per cent, were performed with blood of group O; 166, or 39.5 per cent, with group A; 50, or 11.9 per cent, with group B, and 12, or 2.9 per cent, with group AB. Each donor supplied blood, on an average, 3.96 times; each donor of group O, 4.8 times, and each donor of the AB group only 1.5 times. The cause for this differentiation does not lie in the fact that frequently unmatched blood was transfused. That occurred in only seven cases (transfusion of O blood to two patients belonging to the A group, two patients of the B group, and three patients of the AB group). The donors of the O group were not examined to discover whether they were "dangerous universal donors" with a high titer of agglutinin in their blood serum. If, for some special reason, a physician desires to transfuse blood to other groups, he should first convince himself that no danger is associated therewith. In Germany the certification is usually based on uniformity in the grouping of the donor and the recipient. In Paris, however, many universal donors appear to be employed. The total amount of blood involved in the 420 transfusions performed in Leipzig during the first year after the new service was established was 155,000 cc. The average amount of blood withdrawn, taking all the transfusions into account, was 370 cc. The 420 transfusions were received by 224 patients, 63 per cent of whom received only a single transfusion. The most transfusions (twenty-one) were given in a case of panmyelophthisis; the patient, however, succumbed in spite of a total of 8,430 cc. of blood injected. Untoward incidents, according to the records in the filing cabinet, occurred in Leipzig in thirty cases (7.14 per cent), although the donors and recipients were properly matched. The accidents were for the most part of a mild nature, ranging from a slight to a more violent chill. In two cases the recipient developed icterus, in one instance on the day of the transfusion and in another case after from eight to ten days. The causes for these manifestations were not explained. No injuries to the donors were observed in any case.

In Thuringia a group of blood donors has been organized by the Schutzstaffeln, a society formed within the ranks of the national-socialist party. There are now 210 members of this group available, their residences being widely scattered over Thuringia. The division of the blood groups corresponds to that of Leipzig, which in fact may be taken as the norm for Germany as a whole. But, in contrast with Leipzig, the dangerous universal donors of group O, whose blood has an abnormally high antibody content, are eliminated by application of Coca's method. The donors in Thuringia are free from tuberculosis and syphilis and have no narcotic or alcoholic addiction. Here also blood donor centrals have been created.

Just recently the commander-in-chief of the German army issued regulations concerning the determination of blood groups in the army. It is being introduced as a routine element of the regular physical examination. For the present, all the soldiers entering military hospitals will be subjected to such a test.

The Danger of Intra-Uterine Pessaries

Recently Dr. Gesenius, of the Berlin University Clinic for Women, addressed the Berlin Medical Society on the use of intra-uterine pessaries. The pessaries may be purchased without a medical prescription. Injuries and fatalities have been reported. There are several instances in which the Gräfenberg ring pessary lying in the uterus did not prevent conception. The accidents arising from the use of pessaries are so momentous that the Berlin Medical Society has decided to address a petition to the department of government having such matters in charge, requesting that the manufacture and sale of pessaries be prohibited. The second Berlin University Clinic for Women also has reported several pregnancies (one a tubal pregnancy) during the use of the Gräfenberg pessary.

VIENNA

(From Our Regular Correspondent)

July 17, 1935.

The Location of Carcinomas

The Austrian Society for the Combating of Cancer held recently its annual session. A report was presented by the Austrian representative, Dr. Goldschmidt, on the conference held in Paris to consider the creation of an international organization to combat cancer. The conference dealt also with a report issued by the city of Vienna, which had been worked over by the statistical bureau of the city and placed at the disposal of the Austrian society. According to this report,

TABLE 1.—*Location of Fatal Tumors Occurring in Vienna in 1934*

Organ Affected	Men	Women	Total
Face, skin and lips	84	71	155
Larynx, pharynx, mouth, jaws	152	19	171
Tongue	48	1	49
Thyroid; branchiogenous cancer	7	12	19
Mamma	6	233	239
Esophagus	87	11	98
Stomach	208	185	393
Colon	76	64	140
Rectum	106	76	182
Liver and biliary tract	30	59	89
Urogenital tract except uterus	95	158	253
Uterus	...	581	581
Remaining organs	146	90	236
Totals	1,045	1,560	2,605

2,996 fatal cases of tumor were observed in Vienna in 1934, only 2,605 of which were primary neoplasms. Table 1 shows the localization of these tumors.

In table 2, Dr. Goldschmidt shows what percentage of various tumors observed were amenable to a radical operation. Four groups of tumors are thus tabulated.

The low percentage of cases in which a radical operation appeared worth while is horrifying. Enlightenment of the people, and improvement in medical diagnosis, would appear from these figures to be indispensable conditions. In regard to after-irradiation as supplementary treatment following radical operations, it is noteworthy that, of 177 breast cancer patients operated on, only eighty-eight, or 50 per cent, received after-treatment with roentgen rays or radium. In view of these facts, the Austrian Society for the Combating of Cancer, in cooperation with the bureau of health of Vienna, and the radium center in the Vienna Municipal Hospital, has organized a depository of records of all cancer cases, which is already functioning in a satisfactory manner. The society plans to develop its activities further, so that a complete record of every patient operated on will be kept on file, in order that all necessary postoperative advice may be given. It was announced also that with the 110 mg. of radium belonging to

TABLE 2.—*Percentage of Various Tumors Observed Amenable to a Radical Operation*

Site of Tumor	No. of Tumors	No. Subjected to Radical Operation
Collum uteri	503	228, or 45.3%
Stomach	393	120, or 30.5%
Mamma (female)	233	177, or 76.0%
Rectum	182	87, or 47.8%

the society, which is used at the radium center in Professor Arzt's clinic in the Vienna General Hospital, a total of 15,685 milligram hours was given to cancer patients, last year.

Purpura Haemorrhagica Following the Use of Allyl-Isopropyl-Acetyl-Carbamide

Of late, hypnotics and sedatives have shown an increased demand on the part of the public. There are a large number of drugs that are classed as "mild remedies," but that caution must be observed in the use of these remedies is shown by the histories of two cases reported by Dr. A. Vogel at a recent session of the Vienna Medical Society. He observed two similar cases in a man aged 68 and in a woman aged 70, who, following a small dose of allyl-isopropyl-acetyl-carbamide, developed symptoms of an essential thrombopenia, associated with a severe purpura of the skin and all the mucous membranes. There appeared petechiae of the skin; ecchymoses of the tongue, the gums and the buccal and the nasal mucosae, and hemorrhages of the gums and the nose, together with melena and hematuria. There was a complete absence of thrombocytes, and a prolongation of the bleeding time to from twelve to eighteen minutes. Pressure on the skin produced quickly large hematomas. The causal connection with the ingestion of allyl-isopropyl-acetyl-carbamide was particularly clear in the man. He had taken the preparation only twice within a period of five months, and both times, from two to three hours later, the same clinical and hematologic symptoms developed. It is noteworthy that both patients had taken the drug frequently without accident. There had been intervals of considerable length between the administrations, so that a poisoning may be ruled out, and an acquired idiosyncrasy—an anaphylactic condition—may be assumed. The "thrombocytolytic" action of the drug was exceedingly rapid. It happened that, shortly before the described attack, a blood examination of the woman had been made, which revealed the presence of 325,000 blood platelets. Ten hours after the ingestion of the drug, all the platelets had disappeared. The previous long use of the remedy without mishap is not in contravention of the conception that a sensitization had evidently occurred. In both patients the condition continued for three days, but, following two roentgen irradiations of the spleen, the symptoms disappeared completely, which was accompanied by a rapid rise in the number of thrombocytes and a return to normal of the bleeding time (from one to two minutes).

Operative Treatment of Fractures of Neck of Femur

On the basis of ninety-five cases of median fractures of the neck of the femur in which, at the Denk clinic, pegging operations were performed, corresponding lateral fractures have been operated on in a similar manner. At the last session of the Vienna Medical Society, five cases in which pegging had been done with excellent functional results were demonstrated by Dr. Felsenreich. The advantages are: (1) early mobilization of all joints in favorable cases after from two to three weeks; complete weight-bearing capacity after six weeks; (2) simplification of the after-care, since, in simple cases, immediately after the operation, and in the more difficult cases three weeks later, all extension bandages may be omitted; (3) freedom from pain a few days after the operation; (4) shortening of the stay in the hospital from formerly ten to twelve weeks to from six to seven weeks at present. The early weight-bearing capacity of the leg, demonstrable in median fractures after from eight to twelve days, is not achievable in lateral fractures of the neck of the femur, because the nails used in these cases do not hold in the neck of the femur. The conception now controlling such cases as arise at the Denk clinic may be tersely expressed thus: The median fracture of the neck of the femur should and the lateral fracture may, but need not be, operated on. All purely lateral fractures (that is, those in which the whole lateral contour of the shaft and half of the distal trochanter region are still of one piece) are suitable for operation. Subtrochanteric fractures are not suitable for pegging, since the nail will not hold in the shattered subtrochanteric area. To be sure, as Prof. Dr. Hass emphasized, in case of mere epiphyseolysis of the head of the femur, bloodless reduction gives excellent results. In more than 100 cases of this kind, Professor Hass was able to restore to its position the detached epiphysis. That applies particularly to young patients. However, an operation will often shorten the duration of the healing process, and that is what Dr. Felsenreich wished to emphasize.

The Birthday of Professor Schnitzler

The seventieth birthday of Prof. Dr. Julius Schnitzler was recently celebrated by a large gathering of his pupils and admirers. Professor Schnitzler was compelled to retire recently because of legislation requiring university professors to be emeritized on reaching the age of 70. He is still in possession of his full bodily and mental vigor. His wit and his lively conversation are proverbial in Vienna. Born in Vienna as the son of the then eminent laryngologist Professor Schnitzler, he devoted himself in Vienna to the study of medicine and soon acquired prominence as a surgeon, being entrusted with the direction of the surgical department at the Vienna Policlinic and later at the Franz-Josefs-Spital. His training in internal medicine under Nothnagel, and in pathologic anatomy under Weichselbaum, enabled him to make excellent diagnoses, while the surgical technic he learned from Albert gave him a prominent position. In 1904 he was appointed head of the surgical department of the Krankenhaus Wieden, where he remained more than thirty years. He was the first surgeon in "central" Europe ardently to defend the urgent appendicitis operation. He was also an advocate of the early ulcer operation. Surgery of the biliary ducts, of the lungs and of the pancreas is indebted to him for many important suggestions and methods.

Marriages

THOMAS LUKE GLENNAN, Branchville, S. C., to Miss Margaret Howe of Bartow, Fla., June 14.

FRANCES E. DWORAK, Colorado Springs, Colo., to James Ryder, Ph.D., of New York, June 14.

FREDERICK LEE LIEBOLT, New York, to Miss Edith Eugenia Davis of Kansas City, Mo., May 17.

THOMAS BERNARD CARNEY, Kewanee, Ill., to Miss Katherine Mary Brugge of Chicago, June 29.

HAROLD F. SPENCER, Garnett, Kan., to Miss Margaret Frances Patton of Emporia, Kan., July 3.

PETER VOGEL, New York, to Miss Helen Mandlebaum of Mount Vernon, N. Y., June 6.

HAROLD G. POMAINVILLE, Pittsville, Wis., to Miss Bernice S. Nelson of Madison, June 18.

LEO H. MCMAHON, Breckenridge, Minn., to Miss Alice Hartley of Staples, recently.

SAMUEL RAYMOND DEICH, Passaic, N. J., to Miss Helen Sara Geller of Paterson, July 3.

HUGH WILSON EIKENBERRY to Miss Everissa F. Waite, both of Peru, Ind., June 27.

MERWIN O. LANAM to Miss Frances Hobbie, both of Sioux Falls, S. D., May 26.

LEIF H. LOKVAM, Kenosha, Wis., to Miss Marian J. Owens of Madison, June 25.

EDWIN D. N. LUNN to Miss Lillian Robelen, both of Philadelphia, June 29.

THOMAS H. MCCONNELL JR., Hutchins, Texas, to Miss Hazel Ditto, June 6.

JOHN A. PAYNE III, Sunbury, N. C., to Miss Mary Mundy, April 30.

LOUIS L. MARCUS to Miss Julia Olah, both of Toledo, Ohio, April 25.

Deaths

Joseph Palmer Sheppard ✠ Little Rock, Ark.; Vanderbilt University School of Medicine, Nashville, Tenn., 1900; at various times professor of genito-urinary diseases, clinical instructor in medicine and assistant in medicine, University of Arkansas School of Medicine; at one time secretary of the state board of health; on the staff of the Baptist State Hospital; formerly physician in charge of the Pulaski County Hospital; aged 60; was killed, July 21, in an automobile accident.

Robert Hamilton Hutchinson Jr. ✠ New York; Columbia University College of Physicians and Surgeons, New York, 1905; associate professor of clinical oto-laryngology, New York Post-Graduate Medical School of Columbia University; fellow of the American College of Surgeons; aged 56; member of the board of directors and on the staff of the Bronx Eye and Ear Infirmary; on the staff of the New York Post-Graduate Hospital, where he died, June 21, of uremia.

Wyman W. Andrus, Miles City, Mont.; Trinity Medical College, Toronto, Ont., Canada, 1893; member and past president of the Medical Association of Montana; member and past president of the Montana State Board of Medical Examiners; for ten years mayor of Miles City; formerly member of the state legislature; at one time city health officer; on the staff of the Miles City Hospital; aged 76; died, June 17, of erysipelas.

Blanton L. Hillsman, Richmond, Va.; University College of Medicine, Richmond, 1898; formerly assistant professor of surgery (minor surgery and orthopedics), and clinical instructor in surgery, and lecturer in anatomy at his alma mater and associate in surgery, Medical College of Virginia, Richmond; served during the World War; surgeon of the police department of Richmond; aged 62; died, May 17, of angina pectoris.

Franklin Welker ✠ New York; University of Pennsylvania Department of Medicine, Philadelphia, 1894; president of the Medical Society of the County of New York; fellow of the American College of Physicians; director of medicine, Lutheran Hospital; aged 68; died, July 17, at his summer home in Highland, N. Y., of heart disease.

John Joseph Murphy ✠ Cambridge, Mass.; Harvard University Medical School, Boston, 1913; fellow of the American College of Surgeons; served during the World War; on the staff of the Cambridge City Hospital; aged 49; died suddenly, July 8, while on a vacation trip in North Conway, N. H., of pulmonary hemorrhage.

Lee McKinstry Bryan, Philadelphia; Georgetown University School of Medicine, Washington, D. C., 1921; member of the Medical Society of the State of Pennsylvania; served during the World War; on the staffs of the Misericordia, St. Vincent's and Delaware County hospitals; aged 43; died, July 11, of heart disease.

Robert Olin Simmons ✠ Rome, Ga.; Vanderbilt University School of Medicine, Nashville, Tenn., 1906; past president and secretary of the Floyd County Medical Society; on the staffs of the Harbin Hospital and the McCall Hospital; served during the World War; aged 51; died, June 29, of cardiovascular renal disease.

William Donnison Swan ✠ Cambridge, Mass.; Harvard University Medical School, Boston, 1885; for many years medical examiner for the first district in Middlesex County; honorary president of the board of trustees of the Cambridge Hospital; aged 76; died, June 25, of chronic myocarditis and pulmonary edema.

William Elmer Montgomery, Kansas City, Mo.; University Medical College of Kansas City, 1897; member of the Missouri State Medical Association; also a pharmacist; veteran of the Spanish-American War; aged 61; died, July 11, in the Menorah Hospital, of amyotrophic lateral sclerosis with bulbar paralysis.

William Julian Spring, New York; Columbia University College of Physicians and Surgeons, New York, 1925; on the staff of the New York State Psychiatric Institute and Hospital; aged 32; died, July 12, of shock and multiple fractures of the limbs and spine, as the result of a fall from a fifth story window.

Harrison Worthington Howell, Wilmington, Del.; Hahnemann Medical College and Hospital of Philadelphia, 1896; at one time secretary of the Delaware Homeopathic Medical Society Examining Board; formerly mayor of Wilmington; served during the World War; aged 62; died, July 13, of heart disease.

Frederick Rigby Barnes Jr. ✠ Fall River, Mass.; University of Pennsylvania School of Medicine, Philadelphia, 1913; formerly medical examiner of the Third Bristol District; served during the World War; on the staff of the Truesdale Hospital; aged 45; died, July 18, in the Union Hospital.

Joseph W. Smadel ✠ Vincennes, Ind.; University of Louisville (Ky.) Medical Department, 1896; formerly councilor of the Second District Medical Society; member of the board of health; aged 64; died, June 30, in the Barnes Hospital, St. Louis, of cerebral hemorrhage.

David A. Beattie ✠ San Jose, Calif.; M.B., University of Toronto Faculty of Medicine, 1892, and M.D., Trinity Medical College, Toronto, Ont., 1892; medical missionary in China, 1892-1894; fellow of the American College of Surgeons; aged 66; died, May 26, of polycythemia vera.

Maurice Worcester Turner, Brookline, Mass.; Boston University School of Medicine, 1889; formerly professor of theory and practice at his alma mater; on the staff of the New England Baptist Hospital, Boston, 1900-1916; aged 78; died, June 29, as the result of a fall.

Pierre Pearl Burnside, Wichita Falls, Texas; University of Texas School of Medicine, Galveston, 1933; member of the State Medical Association of Texas; formerly on the staff of the Wichita Falls State Hospital; aged 26; died, July 6, of subacute bacterial endocarditis.

William Jeremiah Devlin, New Orleans; Tulane University of Louisiana School of Medicine, New Orleans, 1915; assistant professor of radiology, Louisiana State University Medical Center; on the staff of the State Charity Hospital; aged 52; died, June 5.

Lawrence Henry Hill ✠ Colorado Springs, Colo.; Washington University School of Medicine, St. Louis, 1907; on the staffs of the Beth-El Hospital, Glockner Sanatorium and Hospital and St. Francis Hospital; aged 50; died, June 9, of pneumonia.

John Byron Hull, Williamstown, Mass.; Albany (N. Y.) Medical College, 1892; chairman of the board of health of Williamstown and school physician; on the staff of the North Adams (Mass.) Hospital; aged 75; died, July 3, of angina pectoris.

Alexander Francis Irwin ✠ Minneapolis; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1889; McGill University Faculty of Medicine, Montreal, Que., Canada, 1890; aged 69; died, May 10, of coronary thrombosis.

Herbert F. Saunders, Arcadia, Texas; Tulane University of Louisiana School of Medicine, New Orleans, 1896; aged 65; died, June 14, in St. Mary's Infirmary, Galveston, of pneumonia, following an operation for intestinal obstruction.

Asahel Clarence Lambert, Charleston, W. Va.; Eclectic Medical Institute, Cincinnati, 1909; member of the Radiological Society of North America; on the staff of the Mountain State Hospital; aged 56; died, June 8, of pneumonia.

John Welch Moss, Seco, Ky.; University of Louisville (Ky.) Medical Department, 1917; member of the Kentucky State Medical Association; aged 41; on the staff of the Seco Hospital, where he died, June 30, of pneumonia.

James Clyde McKay, Detroit; Vanderbilt University School of Medicine, Nashville, Tenn., 1914; also a chemist; served during the World War; aged 42; was found dead, June 21, of chronic myocarditis and nephritis.

Robert Tweedie McGibbon, Saskatoon, Sask., Canada; University of Glasgow Medical Faculty, Glasgow, Scotland, 1919; professor of anatomy, University of Saskatchewan School of Medical Sciences; aged 37; died, May 14.

Homer E. Tuttle, Ithaca, N. Y.; Chicago Homeopathic Medical College, 1896; member of the Medical Society of the State of New York; aged 67; on the staff of the Memorial Hospital, where he died, July 14, of uremia.

Oscar H. Adamson, Georgetown, Ohio; Cleveland College of Physicians and Surgeons, Medical Department of the University of Wooster, 1889; formerly county health commissioner; aged 69; died, June 4, of chronic nephritis.

Charles Swenson ✠ Braham, Minn.; Hamline University College of Medicine, Minneapolis, 1903; formerly county coroner; medical director and owner of the Braham Hospital; aged 58; died, June 2, of chronic nephritis.

Aaron Jones White, Charleston, W. Va.; Tulane University of Louisiana Medical Department, New Orleans, 1914; member of the West Virginia State Medical Association; aged 48; died, July 1, of coronary sclerosis.

Ernest William Landgraf, Omaha; John A. Creighton Medical College, Omaha, 1919; instructor in surgery at his

alma mater; aged 39; on the staff of St. Joseph's Hospital, where he died, June 2, of pneumonia.

Jacob Harvey, Masonville, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1900; member of the Medical Society of the State of New York; aged 60; died, May 26, of angina pectoris.

John J. Lence, Jonesboro, Ill.; University of Louisville (Ky.) Medical Department, 1892; Missouri Medical College, St. Louis, 1893; for many years county coroner; aged 66; died, June 28, of cerebral hemorrhage.

Sidney Simpson, Brownsville, Ky.; Hospital College of Medicine, Louisville, 1905; member of the Kentucky State Medical Association; county health officer; aged 52; died, June 2, in St. Joseph's Hospital, Louisville.

Myer Louis Levin ⊕ Newark, N. J.; University of Vermont College of Medicine, Burlington, 1921; member of the board of education; aged 37; died, June 19, in the Beth Israel Hospital, of bronchopneumonia.

Thomas Henry Remy, Ironton, Ohio; Miami Medical College, Cincinnati, 1895; member of the Ohio State Medical Association; formerly county coroner; aged 68; died, June 11, of carcinoma of the stomach.

William Henry Laughlin, Milltown, N. B., Canada; Albany (N. Y.) Medical College, 1893; for many years mayor of Milltown; served during the World War; aged 69; died, May 25, of heart disease.

Clarence Henry Burton, Mount Clemens, Mich.; Detroit Homeopathic College, 1901; also a dentist; member of the Michigan State Medical Society; aged 57; died, July 13, in St. Joseph's Hospital.

Paul Reagan Leathers, Indianapolis; Indiana University School of Medicine, Indianapolis, 1927; physician in the nutrition division of the city board of health; aged 43; died, June 21, of heart disease.

Thomas Abraham Owens, Toledo, Ohio; University of Michigan Medical School, Ann Arbor, 1932; on the staff of the Mercy Hospital; aged 29; was killed, June 27, in an automobile accident.

Michael J. Vassel, New York; Faculté française de médecine de l'Université de St. Joseph, Beyrouth, Syria, 1910; aged 54; died, June 22, in the Bellevue Hospital, of cardiovascular disease.

Albert C. Kennedy, Patricksburg, Ind.; Medical College of Indiana, Indianapolis, 1898; member of the Indiana State Medical Association; Spanish-American War veteran; aged 61; died, June 12.

James Elmo Simons, Bay City, Texas; Kentucky School of Medicine, Louisville, 1893; member of the State Medical Association of Texas; aged 65; died, June 30, of angina pectoris.

Leonard George Larner, Ozona, Fla.; Hering Medical College, Chicago, 1895; served during the World War; aged 68; died, June 5, in a hospital at Tampa, of rattlesnake bite.

Charles Haddon Shepard, Durham, N. C.; Leonard Medical School, Raleigh, 1901; medical superintendent of the Lincoln Hospital; aged 56; died, May 15, of cerebral hemorrhage.

Hubert Wallace Wilson ⊕ Twin Falls, Idaho; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1892; aged 64; died, June 24, of pulmonary embolism.

Frank E. Wilson, Brooklyn; Jefferson Medical College of Philadelphia, 1882; formerly representative in Congress; aged 78; died, July 12, of chronic myocarditis and nephritis.

Eugene Wiesner, Staten Island, N. Y.; Deutsche Universität Medizinische Fakultät, Prague, Czechoslovakia, 1931; aged 30; died, June 26, of acute dilatation of the heart.

Richard Frank Sitar, Minneapolis; Northwestern University Medical School, Chicago, 1926; member of the Minnesota State Medical Association; aged 37; died, June 20.

Arthur Clifford Johnston, Wyoming, Ont., Canada; Queen's University Faculty of Medicine, Kingston, 1907; died, May 9, of injuries received when struck by a taxi.

William P. Rowland, Bevier, Mo.; St. Louis Medical College, 1888; postmaster of Bevier; aged 74; died, May 5, in the De Paul Hospital, St. Louis, of uremia.

Robert Heber Whallon, Cincinnati; Bellevue Hospital Medical College, New York, 1886; aged 81; died, June 18, in the Longview Hospital, of coronary occlusion.

Willis Daniel Storer, Los Angeles; Chicago Medical College, 1888; aged 72; died, June 27, in the Good Samaritan Hospital, of diverticulum of the esophagus.

Morris Stark, New York; Columbia University College of Physicians and Surgeons, New York, 1901; aged 58; died suddenly, July 18, of cerebral hemorrhage.

John William Whitsett, Hannibal, Ohio; Western Pennsylvania Medical College, Pittsburgh, 1903; aged 59; was killed, June 24, when struck by a truck.

Edwin Rodelle Moorman, Highland Park, Mich.; Vanderbilt University School of Medicine, Nashville, Tenn., 1890; aged 72; died, June 4, of cerebral hemorrhage.

George L. Nicklas, Platteville, Wis.; Hahnemann Medical College and Hospital, Chicago, 1890; aged 72; died, June 21, of influenza and bronchopneumonia.

Louis Clovis Mayrand, Deschambault, Que., Canada; M.B., Laval University Faculty of Medicine, Quebec, 1879, and M.D. in 1880; aged 77; died, March 27.

Walter Hodge Sheldon ⊕ Madison, Wis.; Rush Medical College, Chicago, 1900; aged 60; died, June 10, of septicemia incurred while treating a patient.

James J. Murphy ⊕ Pontiac, Mich.; Detroit College of Medicine, 1897; aged 67; died, July 7, in the Harper Hospital, Detroit, of coronary occlusion.

Waterman A. Vincent ⊕ Three Mile Bay, N. Y.; College of Physicians and Surgeons, Baltimore, 1882; aged 78; died, July 18, of myocarditis.

Walter Harris Lucas, Lakewood, Ohio; Western Reserve University Medical Department, Cleveland, 1893; aged 62; died in July of myocarditis.

Georges Bigue, Ste. Anne de la Perade, Que., Canada; School of Medicine and Surgery of Montreal, 1903; aged 58; died, June 2, of pneumonia.

John Wash Simmons, Detroit; University of Tennessee Medical Department, Nashville, 1893; aged 75; died, June 29, of cerebral hemorrhage.

Elijah A. Lambert, Denton, Ga.; Atlanta School of Medicine, 1909; aged 59; died, June 21, in a hospital at Dublin of cardiac insufficiency.

John Herschel Lemon, New Albany, Ind. (licensed in Indiana in 1897); Civil War veteran; aged 90; died, July 10, of prostatic infection.

Garret A. Van Diest, Prairie View, Kan.; Rush Medical College, Chicago, 1899; member of the Kansas Medical Society; aged 61; died, June 4.

J. A. Hermenegilde MacKay, Beauport, Que., Canada; Laval University Faculty of Medicine, Quebec, 1927; aged 34; died, March 17.

Joseph Alfred Desrosiers, Bic, Que., Canada; Laval University Faculty of Medicine, Quebec, 1915; aged 48; died, March 8.

Joseph Holzman ⊕ Boston; College of Physicians and Surgeons of Chicago, 1892; aged 64; died, June 3, of arteriosclerosis.

Louise Eastman, Norwood, Ohio; Eclectic Medical Institute, Cincinnati, 1898; aged 76; died, June 1, of carcinoma of the lung.

John Gay Williams, Los Fresnos, Texas; Miami Medical College, Cincinnati, 1892; aged 66; died, June 30, of heart disease.

Thomas W. Thompson, Xenia, Ill.; Rush Medical College, Chicago, 1884; aged 77; died, July 5, of cerebral hemorrhage.

George Oliver Dunseth, Tulsa, Okla.; Bennett Medical College, Chicago, 1910; aged 57; died, May 20, of pneumonia.

Edgar O. Nash, Pueblo, Colo.; Pulte Medical College, Cincinnati, 1881; aged 82; died in June of cerebral hemorrhage.

Robert Lee Young, Eutaw, Ala.; Medical College of Alabama, Mobile, 1889; aged 73; died, June 15, of arteriosclerosis.

Shelby L. Wise, Galena, Ohio; Columbus Medical College, 1884; aged 76; died, July 6, of arteriosclerosis.

Henry Wilson Brown, Haverhill, Mass.; Albany (N. Y.) Medical College, 1889; aged 79; died, June 6.

Henry Reiter ⊕ New York; Baltimore University School of Medicine, 1900; aged 55; died, June 14.

Alexander Pollock, Yale, Mich.; Detroit College of Medicine, 1886; aged 77; died, July 11.

CORRECTION

Report of Death.—Dr. Daniel John Townsend of Lohrville, Iowa, was erroneously reported to have died in THE JOURNAL, August 10, page 451.

Correspondence

PREPUTIAL CALCULUS

To the Editor:—To the extensive bibliography of the paper by Dr. N. R. Ingraham Jr., Preputial Calculus, a Clinical Rarity (THE JOURNAL, July 13, p. 106) I wish to add the case described by D. Giordano (Compendio di Chirurgia Italiana, Turin, Unione Tipografica Editrice Torinese **2**:746, 1911) which, freely translated, reads as follows: "I was asked by a colleague to see a clergyman and to be ready, eventually, to perform an amputation for cancer of the glans penis. The foreskin was abnormally distended, showing bluish veins, an extreme phimosis, a muddy fluid of foul odor leaking from the narrow passage. The palpation was painful and impressive of a stony consistency about the glans penis. When the opening was cleaned and the foreskin made to slide in various directions, a whitish surface of calcareous appearance was noticed, against which the probe produced a sound like over a stone. And such it was. A dorsal incision exposed a calcareous formation, several millimeters thick, shaped as a bell, encircling the entire glans penis." The same author then quotes two similar cases from Larghi and Aquapendente.

FRANCESCO RONCHESE, M.D., Providence, R. I.

SIROIL

To the Editor:—In the Bureau of Investigation department of THE JOURNAL of July 27 there is an article on Siroil and in this I am named as one of the directors of the Siroil Laboratories. You no doubt have been misinformed, as I have absolutely no connection with that company other than my friendship for Mr. Ben Kaufmann, who has been a close friend of mine since we were boys.

About four years ago Mr. Kaufmann asked me persistently to try his preparation for psoriasis, and after I saw the formula I decided it could do no harm and tried it out first on small isolated lesions and later in severe cases, with very satisfactory results. Since that time, occasionally a patient went direct to their office, and if diagnosis for psoriasis had not been made they would send the patient to me for diagnosis and would pay the usual fee.

About a year ago Mr. Kaufmann, in a very casual manner, thinking he was doing something for me, said he had put me on his Board of Directors. This I emphatically refused and dismissed the matter from my mind, so was greatly surprised to read your article. I got in touch with Mr. Kaufmann immediately and he promised to write to you.

Will you please publish this letter? I have practiced medicine twenty-six years and I have yet to commit my first unethical act.

R. J. MCCLELLAN, M.D., Detroit.

[EDITORIAL COMMENT.—The article on "Siroil" stated that among the directors of Siroil Laboratories, Inc., "there are said to be Frank V. Martin, Dr. R. J. McClellan and S. Meisner." This statement was based on a report from a thoroughly reliable source. In addition to Dr. McClellan's letter, the Bureau of Investigation also received a letter dated August 1 from Mr. Ben Kaufmann, the original president of the Siroil Laboratories, in which Mr. Kaufmann states that he substantiates everything that Dr. McClellan has outlined in his letter. Mr. Kaufmann then added: "At the time that I made Dr. McClellan a director of this company, I did so as a courtesy to him and in recognition of our life-long friendship. I certainly never realized for one moment that this action on my part might result in the embarrassment which is his as a result of my action. I deeply regret this act of mine and I am rectifying it immediately by withdrawing Dr. McClellan's name as a director of our company." It appears therefore that the statement as it appeared in THE JOURNAL was technically correct, as Dr. McClellan obviously has had his name withdrawn as a director only since the article appeared. Dr. McClellan seems to have been the innocent victim of an embarrassing "courtesy."]

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

TUBERCULIN TEST

To the Editor:—Of what value and reliability is the intradermal tuberculin (or purified protein derivative) test in infancy, youth and adult ages? Does it always show a positive in those who have some lesion no matter how mild; e. g., nearly all adults? What would the test be like in active tuberculosis (lungs, glands, bone); what in quiescent tuberculosis, what in recurrent tuberculosis?

MATTHEW KARASEK, M.D., Shidler, Okla.

ANSWER.—The intradermal tuberculin test, whether administered with old tuberculin or with purified protein derivative, is a test for sensitiveness of tissues to tuberculoprotein. Like all biologic tests it is not infallible, and yet it is probably the most reliable of all of them. So far as is known there is nothing that is taken into the human body in nature that results in sensitiveness of the tissues to tuberculoprotein but the tubercle bacillus. Both human and bovine strains of tubercle bacilli when growing in the human body result in a sensitiveness of the tissues. Therefore, when the tissues are sensitive to tuberculin it is good evidence that tubercle formation is present in some stage of its development; that is, lesions of the first infection type of tuberculosis are present.

Once such foci of tuberculosis are developed and tubercle bacilli remain alive in or about them, the tuberculin test continues to be positive as long as the individual lives. The careful pathologic studies of Robertson (*Am. J. Path.* **9**:711, supplement, 1933) have revealed the fact that large numbers of these foci contain living tubercle bacilli throughout the lifetime of the body. It is conceivable that in some instances bacilli are eventually destroyed or die out, after which there is no protein produced to keep up the sensitiveness of the tissues; hence the positive tuberculin reaction disappears. The tuberculin test, therefore, is a test for the first infection type of tuberculosis and is diagnostic of that disease. Unfortunately the test gives no evidence as to the location, size or extent of the foci. Moreover, when reinfections develop, whether from exogenous or from endogenous sources, the sensitiveness of the tissues is usually changed little or not at all. Therefore the tuberculin test provides no evidence as to the presence or absence of the reinfection clinical type of disease. The test gives the same information regardless of whether the individual tested is an infant, youth or adult. It does not detect reinfection, clinical forms of the disease, whether acute or chronic, but since these are always preceded by the first infection type of disease, every positive tuberculin reactor regardless of age should be carefully examined by other methods to determine whether clinical forms of the disease are developing.

At one time it was believed that the test is of more value among infants and young children than in later life because it detected the infection nearer the time of its development. However, at that time it was thought that a high percentage of infected infants succumbed to clinical forms of tuberculosis, such as meningitis and miliary disease. Since the test has been administered in a routine way in large groups of infants and young children, it has been learned that relatively few of those infected actually fall ill or die from the disease: that is, a high percentage of them tolerate it well and usually without the development of any significant symptoms. Indeed, the disease is well tolerated throughout the period of childhood. The great destruction from tuberculosis in the human family begins about the period of adolescence and reaches its height at about the age of 25 years but continues to be a serious menace to health and life throughout the remainder of life's span. Therefore, if one is seeking clinical forms of tuberculosis, the tuberculin test is of greatest value during the period of adolescence and subsequently.

The tuberculin test is no longer positive in nearly all adults. The majority of adults in many parts of the country in the

teens and twenties have not been infected with tubercle bacilli and, therefore, react negatively to the test. As the number of open cases of tuberculosis in man and animals decreases through treatment, isolation, and so on, the greater will be the number of persons who reach adult life without sensitiveness of the tissues to tuberculin.

The tuberculin reaction in active, clinical tuberculosis of the lungs and other organs is not different from that in persons who have only the first infection type of disease, except that in some cases the individual develops such extensive disease and so much tuberculoprotein is liberated that the tissues become desensitized to some degree. Indeed, in some such patients the desensitization is so complete that it can be detected only by the administration of huge doses of tuberculin, but in such cases other phases of the examination usually clearly indicate tuberculosis. This is true also in some cases of acute clinical tuberculosis, such as meningitis and miliary disease, even in the bodies of infants. In quiescent and recurrent tuberculosis, the tuberculin reaction does not necessarily change from that of the first infection manifestations, with the foregoing exceptions.

TREATMENT OF PERSISTENT ULCER AFTER BURN

To the Editor:—Eight months ago I began treating a severe burn on a man, aged 50. His entire back from the neck to the crest of the ilium and the dorsal surface of the left arm and forearm were involved with first, second and third degree burns. Tannic acid treatment was instituted in the usual way and healing progressed nicely for several months, when infection occurred below the coagulum. Various methods of producing epithelial growth with marked success were used until at present there is an area over the left scapular region 3 by 6 inches unhealed. This area has a raised glistening surface that exudes a clear serous fluid, which turns yellow after the dressings are left on for several hours. The edges are healthy, showing no signs of inflammation or induration. Healing has for several weeks been at a standstill and no method of treatment seems to be of any use. I would appreciate advice in treating this area. Grafting has been tried on two occasions without success. Culture shows the exudate negative to bacteria. This red glistening surface is quite painful at times and most relief is afforded by the use of merthiolate aqueous solution, 1: 5,000. Please omit name.

M.D., Illinois.

ANSWER.—An ulcer that is the end result of an extensive burn is sometimes very obstinate in healing when epithelization from the edges ceases and skin grafting has been a failure. It may be necessary to resect the entire granulating surface. Following this radical procedure, thorough treatment of the wound should be done with moist dressings of surgical solution of chlorinated soda for three or four days before proceeding with the skin grafting. The preferable method of skin grafting is the Reverdin pinch graft.

A good technic to follow in skin grafting this type of ulcer is to plant the grafts (not full thickness) on the granulating area. Place one layer of very thin mesh gauze, such as the mesh in a gauze bandage, over the grafted ulcer. Gently press the islands with a moist sponge to fix the gauze. Anchor the gauze at the edges with zinc oxide and apply plenty of fluff gauze over this single layer of gauze. Allow the dressing to remain dry for six hours. At the end of this time begin wetting the dressing with surgical solution of chlorinated soda 0.5 per cent, keeping the dressing moist for five days, at which time the first dressing is done. In the event there is evidence of infection manifested by an elevation in temperature and purulent drainage showing through the dressing, the latter may be changed before the fifth day.

HIGH SUICIDE RATE OF CALIFORNIA

To the Editor:—Under death rates in large cities (THE JOURNAL, Oct. 20, 1934, p. 1243), it is stated that San Francisco has the highest suicide rate. San Francisco has had this unenviable record for many years to my knowledge. A friend of mine, much interested in seismology, believes it is due to seismic disturbances. I have not been able to account for it on an economic basis, for similar conditions prevail elsewhere. Have you an explanation?

HANS SCHROEDER, M.D., New Orleans.

ANSWER.—It is, of course, true that San Francisco has had an unenviable record with regard to the frequency of suicides for many years past. For example, during the five years 1925-1929 it was the leading city in the United States, with an average death rate of 38.8 per hundred thousand of population. In 1933, as the correspondent noted, it also stood first, with a rate of 37.6. Other California cities, such as Los Angeles, Oakland and San Diego, also consistently show high rates. However, there is no evidence that seismic disturbances are the cause of this highly unfavorable showing. Very high rates prevail in other western cities outside the earthquake area, such as Seattle, Portland, Denver, Spokane and Omaha; Minneapolis, Kansas City and St. Louis have also a very high mortality from suicide. Rates for the white population in some southern cities are likewise high. In contrast, certain eastern cities have suicide rates far below the average for the United States as a whole.

It is difficult to account for the striking geographic differences in the suicide rate in this country. The composition of the population undoubtedly plays a part—its age, sex, color and racial distribution. The large proportion of Teutonic inhabitants, in some of the cities mentioned, undoubtedly contributes to their high suicide rate, for Germanic peoples have long been noteworthy in this respect. This fact alone would lead one to distrust the causal effect of seismic disturbances on suicide. In Europe the highest suicide rates are found in Germany, Austria, Hungary, Poland and Czechoslovakia—countries where earthquakes are practically unknown. On the other hand, earthquakes are prevalent in South American countries, and nevertheless Chile has one of the lowest suicide records in the world.

The whole phenomenon of suicide is far too complicated to be explained in so simple a way as the correspondent imagines. Many complex factors are involved—economic considerations, cultural patterns, religious beliefs, and, most important of all, psychologic attitudes that determine the mental and emotional reactions of the individual. It is almost impossible to isolate any one of these and point to it as the causal factor behind the suicide. Instead, one is generally confronted with a combination of circumstances which together serve as motivating forces.

In conclusion, the correspondent is referred to Dr. Anita Mühl's interesting analysis of more than 500 suicides that occurred in San Diego, Calif., between the years 1911 and 1927. From a study of these data the author concludes that "this jumping-off place of the United States holds a death lure for individuals with regressive tendencies who have found it impossible to adjust themselves at one level or another." We agree with this view and think that it explains much of the excess in the Pacific Coast suicide rate.

DIABETIC NEURITIS

To the Editor:—In answer to a query (THE JOURNAL, January 12, p. 140) regarding the treatment of neuritis in an overweight (190 pounds, or 86 Kg.) diabetic patient who has a persistent hyperglycemia, it was suggested that "the patient be kept on a moderately high diet, well balanced, and that the insulin be omitted temporarily." There can be little doubt that if this advice is followed a higher blood sugar will result, while it is well known that a normal, or nearly normal, blood sugar is essential for the relief of a diabetic neuritis. Fat diabetic patients, even though the diabetes is mild, are relatively resistant to insulin. Large doses affect the level of the blood sugar but little, while a restriction of the total calories to approximately 15 or 20 per kilogram of body weight will decrease the blood sugar at a satisfactory rate without insulin. In view of the patient's age, 78, liberal carbohydrate—approximately 150 Gm. —is advisable. With this allowance there need be no fear in gradually reducing the blood sugar to normal despite the popular but, I believe erroneous, belief that a hyperglycemia is advisable in elderly patients with diabetes.

GARFIELD G. DUNCAN, M.D., Philadelphia.

ANSWER.—The original answer and the present query are not as mutually contradictory as they appear at first sight. The confusion has probably arisen from the desire of the first writer to be very brief. He undoubtedly meant a moderately high carbohydrate diet suited to the patient's needs, which would of course be a subcaloric diet in view of the patient's overweight.

It is generally agreed that a normal blood sugar is desirable for the relief of diabetic neuritis. However, it is not improbable that in this patient the pain is at least partly on an arteriosclerotic basis. Marked or sudden lowering of the blood sugar in the latter case may aggravate instead of relieve the distress, as occurs in the arteriosclerotic heart. Omission of insulin, if possible, was probably advised not only on the foregoing basis but also on the clinical and experimental considerations that insulin itself may have some influence on the muscle of the cardiovascular system. The influence of the available carbohydrate and insulin on the heart have been recently reported:

Soskin, Samuel; Katz, L. N.; Strouse, Solomon, and Rubinfeld, S. H.: Treatment of Elderly Diabetic Patients with Cardiovascular Disease, *Arch. Int. Med.* **51**: 122 (Jan.) 1933.

Soskin, Samuel; Katz, L. N., and Frisch, Robert: Dual Nature of the Action of Insulin upon the Heart, *Ann. Int. Med.* **8**: 900 (Feb.) 1935.

These papers do not state that hyperglycemia is advisable in elderly diabetic patients with cardiovascular disease. They do show that in some of these cases too great or too rapid reduction of the sugar available to the heart is followed by subjective and objective signs of cardiac distress. Since the amount of sugar in the blood is only a balance between that entering and that leaving the blood at any time, it may be readily understood that a high blood sugar level is not necessarily synonymous with a large supply of available blood sugar. The magnitude of the replenishing source and the rapidity of the exchange are important factors.

POSSIBLE OBSTRUCTION OF COMMON DUCT AFTER CHOLECYSTECTOMY

To the Editor:—An obese woman, aged 43, had cholecystectomy one year ago and seven small stones were found. She now complains of severe pain under the right breast, passing around to the right shoulder blade. It lasts two or three days and is associated with great weakness, headaches, pain in the eyes, pruritus, and light colored stools with diarrhea. Tenderness is present over the xiphoid process. What procedure for diagnosis and treatment would you suggest? Please omit name.

M.D., New York.

ANSWER.—Local tenderness over the gallbladder, light colored stools, itching and the other systemic symptoms mentioned are suggestive of some obstruction of the common duct.

An icterus index and a van den Bergh test should be made during the attacks. The stool and urine should be examined for bile. Not infrequently an obstructing stone in the cystic duct is squeezed into the common duct or overlooked at the time of the operation. Small stones may pass out of the common duct with symptoms of colic but frequently they must be removed by operation.

Not all painful attacks after operation on the gallbladder are due to overlooked stones. Occasionally some obstruction of the common duct such as inflammation or perhaps spasm of the sphincter of Oddi may be present. Chronic pancreatitis may produce a constriction of the duct. A hepatitis may persist for some time after removal of the gallbladder and be the cause of such symptoms.

One should try medical treatment, including the instillation of a magnesium sulphate solution through a duodenal tube on an empty stomach. A careful regulation of the diet should be observed over a period of several weeks with an effort to spare the liver.

If there is evidence of common duct obstruction and no relief is obtained after a reasonable period of medical treatment, operation should be advised for exploration of the common duct. This may be quite difficult and should be thorough, as a small stone may easily be overlooked. The common duct should be sounded to determine the presence of a stricture if no stone is found. The results will determine the operative indications.

A chronic colitis may simulate these symptoms closely and, among a number of other possible conditions, should be looked for and treated if necessary.

ASPERGILLOSIS

To the Editor:—A man, aged 25, gives a history of a chronic cough with expectoration of a large amount of foul-smelling, greenish yellow sputum since childhood. He was susceptible to colds during childhood. He has been working steadily as a baker for the past five years with apparent good strength and not losing any weight. The physical examination is negative, except for the presence of a few coarse râles over both bases of the lungs posteriorly. Positive cultures of Aspergillus niger were obtained. Roentgenograms showed multiple abscesses of moderate size in both bases of the lungs. There is also evidence of old healed abscesses. Treatment consisted of postural drainage, large doses of potassium iodide, 120 grains (8 Gm.) daily for one month, ultraviolet therapy and small doses of creosote. There has been but little improvement in the roentgenograms since the beginning of the treatment. I have started neoarsphenamine and bismuth therapy. What is the accepted treatment and the value of the autogenous vaccine? What is the incidence of aspergillosis? Please omit name.

M.D., Connecticut.

ANSWER.—Pulmonary aspergillosis is rare in this country. Cases have been reported chiefly from France. The disease is found in pigeon feeders, hair sorters and sponge combers. Secondary invasion may occur in pulmonary tuberculosis. The treatment is that of pneumomycosis. In addition to the measures employed, roentgen therapy might be of advantage. It is doubtful whether autogenous vaccine has any value in this condition.

CRANIOTOMY IN FRACTURE OF SKULL

To the Editor:—Please state under what conditions, if any, a craniotomy is indicated in the treatment of a fracture of the base of the skull. What are the usual procedures recommended for use in the treatment of this serious condition? Please omit name.

M.D., Mississippi.

ANSWER.—Fractures of the base of the skull are usually fissures in the bone and are associated with symptoms of severe intracranial injury, such as loss of consciousness, stertorous breathing and marked shock. During the period of shock, such supportive measures as elevation of the foot of the bed, application of heat, and stimulants such as coffee by proctoclysis should be administered. The intravenous administration of a 20 per cent hypertonic solution of dextrose in amounts of 500 cc. or of a 50 per cent solution in amounts of 100 cc. can be given not only to improve the condition of the patient but also to prevent or to reduce associated cerebral edema. After recovery from shock, roentgenograms of the head can be taken to determine the amount of injury. If the patient remains unconscious, intranasal feedings can be carried out; and magnesium sulphate retention enemas will tend to reduce the cerebral edema further. A chart should be kept on which hourly readings of the pulse rate, blood pressure and temperature are recorded. Lumbar puncture should be done in suitable cases to relieve intracranial pressure further and to remove any blood from the cerebrospinal fluid. Craniotomy is seldom indicated for fractures of the base of the skull unless there is evidence of intracranial bleeding due to an associated lesion that produces rupture of the meningeal vessels involving the cerebral hemispheres. Another condition that might prevail in which craniotomy would be indicated is increased intracranial pressure due to cerebral edema; under such circumstances, right subtemporal decompression could be done. As a rule, patients who suffer from fractures at the base of the skull and who do not respond to medical measures have usually sustained severe intracranial trauma and operation offers them but little.

HAZARDS OF COPPER PLATING INDUSTRY

To the Editor:—Could there be any systemic effect from working in a copper plating department using the following formulas for copper plating steel: First solution, sodium cyanide, sodium bisulphite, sodium thiosulphate and caustic flakes. Cleaning solution, lump caustic, trisodium phosphate, soda ash and resin. Then sulphuric acid in 10 to 15 per cent solution used in pickling the iron. This solution gives off fumes which at times become very dense, like a vapor, and the workers feel that they have some effect on their lungs and stomach. Please omit name.

M.D., Pennsylvania.

ANSWER.—In this situation it is probable that the sulphuric acid constitutes more of a practical hazard to systemic disease than any of the other agents specified. Sulphuric acid has the reputation of not evaporating; but, as a result of the countless numbers of bubbles produced in the chemical processes of metal pickling, much sulphuric acid may be thrust into the atmosphere of the plating or pickling room. These acid vapors are the source of irritation in the mouth, respiratory tract and along the gastro-intestinal tract. Gastritis and ulcers of the gastro-intestinal tract are believed to be of higher frequency among plating workers, galvanizers and picklers than is true for the general work population.

Second in importance is the sodium cyanide, which, however, is not so highly toxic as has long been the belief of both the medical profession and the public. Chronic poisoning by cyanogen compounds has been questioned but by others it has been associated with nausea, loss of appetite, gastro-intestinal dysfunctions and albuminuria. Acute and severe poisoning by cyanogen gases constitutes a definite disease entity characterized by impaired respiration, marked slowing of the heart rate, lowering of temperature, dilatation of the pupils and quick loss of consciousness, associated with cyanosis of the skin. In spite of extensive applications of cyanides in industry, cases of industrial poisoning are quite rare. On this account greater significance is attached to the sulphuric acid as a more likely source of abnormalities among the workers in this copper plating department.

SEX OF FIRST BORN BABIES

To the Editor:—Are there statistics as to which sex predominates among first born babies? If there are no statistics, what is the accepted opinion of the best informed physicians?

COL. ODE C. NICHOLS, Hollywood, Calif.

ANSWER.—There is some difference of opinion among statisticians regarding the predominance of male children in first births, but the majority seem to think that the number of boys born to primiparas is larger than in subsequent labors. Bidder (Influence of Age on Sex of Child, *Ztschr. f. Geburtsh. u. Gynäk.*, 1878) said that more boys than girls are born to primiparas.

Punnett (Sex Determination in Man, *Proc. Cambridge Phil. Soc.*, 1915) said the same thing.

Siegel (Schwankungen der weiblichen Fruchtbarkeit, Berlin, Springer, 1917) found that primiparas have 111.7 boys to 100 girls and multiparas 104 boys to 100 girls.

H. D. King (Studies on Inbreeding, *J. Exper. Zool.*, 1918) found that primiparous white rats had 115.9 males against 101.1 subsequently.

Halban-Seitz (**1**:824), in a long discussion of the subject, with much literature cited, shows that during and after the Franco-Prussian War there was no increase in boys but, after the Great War there was a demonstrable increase in their number in Germany, so that the notion that nature tries to replace the soldiers lost in war may have some slight basis in fact.

TOXICITY OF SODIUM THIOCYANATE

To the Editor:—I have had a patient on sodium sulphocyanate for about eight months. At the present time he is taking about 3 grains (0.2 Gm.) every third day. He has an essential hypertension. He feels fine. The urine is normal on bimonthly examination. Is there any danger from the continued use of the drug? Please omit name.

M.D., Ohio.

ANSWER.—The usual therapeutic dose of sodium thiocyanate is from 0.5 to 1 Gm. daily, in divided doses. Thus there should be no fear of intoxication from the administration of but 0.2 Gm. every third day. It is distinctly dangerous to continue medication of 1 Gm. daily, for the drug is slowly eliminated and cumulative effects may occur. Renal functional impairment adds greatly to the risk. The tolerance to thiocyanate salts is not uniform; in certain susceptible individuals even small amounts have been known to induce serious intoxication. In the present instance, however, there appears to be no intolerance and no appreciable renal functional impairment. Therefore continued medication with such conservative doses should be without danger.

The earliest symptoms of thiocyanate intoxication are muscular weakness, dermatitis, nausea and vomiting. With more severe intoxication slight fever, mental confusion and disorientation, delirium, convulsive seizures and coma appear in the order mentioned. The present consensus is that thiocyanate is an active vasodilator but that as a rule clinically effective doses often prove too toxic to be considered safe in hypertensive arterial disease. The query does not state whether the small amounts administered have been adequate to reduce the arterial tension and/or keep it depressed. If these amounts have proved efficacious, there appears to be a wide margin of safety in the regimen as stated.

FINGER PUNCTURE METHOD FOR SEDIMENTATION TEST

To the Editor:—Have you Cutler's "A Finger Puncture Method for Blood Sedimentation Tests" on hand or any material on sedimentation tests?

JOHN F. CAREY, M.D., Joliet, Ill.

ANSWER.—The Cutler finger puncture method for determining the sedimentation time of erythrocytes is performed as follows:

Carefully cleanse the distal phalanx of one of the fingers with alcohol, and then rub to induce hyperemia. Puncture on the palmar surface. Collect blood in the collecting tube until about half filled (0.5 cc.). The tube must be clean and dry. It is filled with 3 per cent sodium citrate solution and emptied. The citrate solution clinging to the walls is sufficient to prevent clotting. From time to time the finger tip and rim of the tube must be wiped with the citrate solution to remove clotted particles, and the tube shaken. If clotting occurs, the test must be repeated.

Shake the tube containing the blood to insure uniform distribution of the blood cells. Then draw blood into the sedimentation pipet. (The tubes and pipets may be obtained from the A. H. Thomas Company, Philadelphia). The blood is drawn up to the zero mark and then kept there by attaching a spring cap to the bottom of the pipet. Place the pipet in the sedimentation rack and determine the change in velocity by observing the upper level of the column of red blood cells every five minutes for one hour. These observations are recorded on sedimentation charts. Thus a graph is traced which shows the position of the blood cell column at any period during the first hour. This technic is described in Kolmer and Boerner's Approved Laboratory Technic, New York, D. Appleton & Co., 1931.

TIGHT SPHINCTER ANI

To the Editor:—I find that many patients who complain of constipation and flatulence have an overdeveloped and tight sphincter ani. Is forcible dilation or divulsion under general anesthesia the procedure of choice, or will the rubber or glass dilator sets accomplish the purpose in these cases? Please omit name if published.

M.D., California.

ANSWER.—An abnormally tight sphincter ani accounts for a certain number of cases of constipation and flatulence. There is another group of cases in which the mucosa in the region of the anal sphincter is inflamed and infected. The heightened irritability in this region seems to increase the normal tendency to a reversal of the gradient of forces in this part of the bowel; as a result, gas and fecal material tend to remain in the region of the splenic flexure.

In a number of cases a cure can be worked by the proctologist who will carefully dilate the sphincter under anesthesia. Obviously, judgment and experience are required in order not to do too much injury to the muscle fibers.

It seems probable that some relief can be obtained at times with the hard rubber dilators or with the two-bladed apparatus that can be inserted by the patient and then opened up with a screw. At least, some patients state that they have obtained relief through their own efforts at dilation.

In many cases the tight anus appears to be a manifestation or end result of an abnormally tense nervous state, and then one must fear a return of the trouble, even after the most successful operative dilation.

RECURRENT CONJUNCTIVITIS

To the Editor:—A man, aged 34, since June 1932 has had a bloodshot eye with associated conjunctivitis three or four times a year. An attack comes in one eye and the succeeding attack in the other eye. The condition starts subjectively as an irritation and the eye is bloodshot in four or five hours from the onset of symptoms. In the morning he notices that his eye is stuck shut with a yellowish discharge not noticed during the day at the time of an attack. His eyes are somewhat red after he has taken liquor in excess. None of the attacks have been preceded by the taking of liquor. They never affect the sight or the iris. The condition usually lasts from five days to a week. The present attack has lasted a week and a half. The patient saw an eye specialist about a year ago, who said that he had slight astigmatism and gave him glasses. There is no fever or systemic disturbance at the time of an attack. A culture of the discharge from the eye showed, on gram staining, gram-positive bacilli, probably diphtheroids, and a few gram-positive cocci. A culture on Loefler blood agar yielded micrococci. The patient is in good health, is married and has one normal child. He has worked in a filling station for the past two years.

M.D., Minnesota.

ANSWER.—It would appear that the patient suffers from spasmodic attacks of an acute purulent conjunctivitis, evidently of bacterial origin. The attacks are naturally self limited, but the conjunctiva does not become free from organisms. It would be well to cleanse the conjunctiva with a bactericidal solution (including washing of the tear sacs) until no further organisms can be found on culture.

MECHANISM OF RELIEF OF PAIN IN ANGINA PECTORIS AFTER TOTAL ABLATION OF THYROID

To the Editor:—A local physician who is the victim of angina pectoris has requested me to inquire as to the authenticity of a statement that he has seen recently in the medical literature to the effect that the total ablation of the thyroid gland for angina pectoris is of value only as it cuts the sympathetic nerve to the coronary artery. Can you tell me the source of this statement, and what is your opinion on the matter?

F. H. HAGAMAN, M.D., Jackson, Miss.

ANSWER.—In a recent publication (*Am. J. M. Sc.* **187**:753 [June] 1934) evidence was presented by Weinstein, Davis, Berlin and Blumgart indicating that early relief of pain in a patient with angina pectoris, after total ablation of the normal thyroid gland, was due to the section of nerves during the operation. The more lasting relief of the pain was not thought to be due to the section of these nerves but rather to the diminution of the work of the heart when the basal metabolism gradually fell. The whole question is still somewhat in doubt, and in addition to the foregoing two factors there may be a further effect; namely, a diminished sensitivity of the heart to epinephrine that follows the total ablation of the thyroid gland.

SINUS IN GUMS AFTER TRAUMA FROM TOOTHPICK

To the Editor:—A man, aged 37, while picking his teeth about two years ago, ran a splinter from the toothpick into the mucous membrane just posterior to the incisor teeth. He thought he removed the splinter at the time, but about two weeks following this the area became swollen and tender and a drainage started which lasted for about one month. He was then symptom free for about one year, when again the area became swollen and tender and began to drain. The drainage has continued since that time and the last three weeks has become bloody in character. The patient came to me about a week ago. Examination at that time revealed a small sinus or hole about one-fourth inch posterior to the two incisors in the midline. There is no swelling or tenderness in the area and the soft tissues appear to be normal. By using a fine needle it is possible to probe the sinus, which seems to extend into the maxillary bone for approximately one-fourth inch. The patient has no other complaints and examination is essentially negative except for this condition. I am enclosing a roentgenogram, which will not need to be returned. I would apppreciate any suggestions for diagnosis and treatment which you may give. Please omit name.

M.D., Nebraska.

ANSWER.—The case in question shows no gross bone change, and one would naturally assume that the trouble is due to the toothpick, which, of course, would not show in the roentgenogram. The facts can easily be determined by raising a mucoperiosteal flap in the anterior portion of the hard palate, which will expose the territory involved. In this way the tract can be explored to its complete depth and whatever is present may be easily removed.

DYE OR LEATHER SENSITIVITY

To the Editor:—Kindly inform me regarding the treatment of dermatitis due to black leather dye. I have a patient who bought a black leather strap for a wrist watch. Soon after she started to wear it her wrist became inflamed, just where it was in contact with the strap. This has spread in the course of a week to a band about 4 inches wide. There is a small area about an inch in diameter on the other wrist. The inflamed skin is slightly elevated and is bright red and itches intensely. Please omit name if this letter is published.

M.D., Ohio.

ANSWER.—The case described presents two main possibilities in diagnosis. One is that the dermatitis is due to dye sensitivity (or possibly even to leather sensitivity), as the inquirer suggests. The other possibility is that it is due to a ringworm (Trichophyton) infection secondary to mechanical irritation. The inflamed skin should be examined carefully for signs of fungus infections, and microscopic examinations of the scrapings made. If it is decided that it is not a fungus infection the further question of etiology could be determined by patch tests. It would appear that the most practical procedure would be to discard the leather strap and to treat the inflamed area with mild lotions and protective ointments.

This case recalls to mind the importance of dyes as irritants, especially in dye industries. In a recent bulletin issued by the U. S. Public Health Service (Skin Hazards in American Industry, Public Health Bulletin 215, October 1934) attention is called to the occurrence of dermatitis in dye manufacturing. Some 400 instances of dye dermatitis are analyzed. The authors conclude also that desensitization is not successful in these chronic cases.

USE OF PERTUSSIS VACCINE

To the Editor:—In the use of Sauer's pertussis vaccine for immunization, it is recommended that an equal amount be injected in each deltoid region and that each subsequent injection be given in a different site. Would you please explain why the full dosage of an injection, say 2 cc., should be divided 1 cc. in each arm instead of 2 cc. in one site, and also why a different site should be used at each subsequent injection? It seems unnecessary to make two injections when one would suffice.

M.D., Long Island.

ANSWER.—This vaccine, used for the prevention of whooping cough, not infrequently causes a transient local reaction. It is used early in life—chiefly between the sixth month and the third year. Its particulate nature (10,000 million bacilli per cubic centimeter) is conducive to slow absorption, and the endotoxin of the vaccine often acts on the subcutaneous capillaries, so that a local induration of the skin or a subcutaneous nodule may often be palpated for a week or more. The intensity of these reactions is reduced when the three doses are given bilaterally, a different site being used for each of the weekly injections. If a 26 gage needle is used, there is scarcely any pain.

ASTHMA FROM SENSITIVITY TO COLD

To the Editor:—A woman, aged 40, whose general health is good and in whom the Wassermann reaction is negative, apparently has an allergy to snow storms and snow. Snowstorms immediately precipitate or bring on severe asthma and air hunger. The patient becomes cyanotic. These attacks are relieved by hypodermic injections of epinephrine, atropine and morphine followed by ephedrine and amytal by mouth. I do not understand why snow precipitates these attacks unless the snowflakes bring down with them pollens or other foreign substances in the air. Do you consider it possible to determine the etiology by the use of capillary tubes? Can the patient be immunized to prevent these attacks? Please omit name.

M.D., Wisconsin.

ANSWER.—This is a typical history of asthma caused by sensitiveness to cold. It can probably be relieved by careful alternation of heat followed by ice rubs, covering a limited area of skin. A discussion of the treatment may be found in an article entitled "Treatment of Physical Allergy," by W. W. Duke (*J. Allergy* **3**:408 [May] 1932).

CANCER IN ESKIMOS AND CHINESE

To the Editor:—Have you any data on the incidence of cancer in general as the cause of death in the Chinese of the interior of China or of the Eskimos in their native state as compared with ours?

HANS SCHROEDER, M.D., New Orleans.

ANSWER.—No accurate data on cancer as a cause of death in the Chinese or the Eskimos are available because there are no census reports to show the population, and also no death certificates to show with any accuracy the cause of death in any given district. Physicians working in hospitals in Chinese cities report that they see many cases of cancer among the Chinese, and in a paper by Fibiger (*Ztschr. f. Krebsforsch.* **20**:148 [June] 1923), who studied the records of physicians and hospitals in Greenland, it is shown that cancer was about as proportionally frequent in those Eskimos who came to the institutions as in a similar population elsewhere.

PHENOLPHTHALEIN WITHOUT EFFECT ON BLOOD FORMING ORGANS

To the Editor:—Kindly let me know whether phenolphthalein has any effect on the blood stream or blood producing organs. Do you know of a case of agranulocytic angina or neuropenia caused by phenolphthalein?

M.D., Texas.

ANSWER.—Phenolphthalein has no known effect on the blood stream or the blood forming organs. No case of agranulocytic angina or neutropenia due to phenolphthalein is on record.

BURNS FROM PERMANENT WAVE MACHINE

To the Editor:—In Queries and Minor Notes in THE JOURNAL, July 20, page 223, a question is asked with regard to the treatment of scalp burns from permanent wave machines. The questioner aptly states that these are becoming more frequent since a constantly larger number of women are facilitating the dressing of their more or less unruly hair with the fixation which "permanent" waving produces.

In undertaking to treat burns resulting from this process, one must take two things into consideration: first, that usually the burns are deep (third degree) and, second, that they are frequently infected from the ever present bacteria on the scalp and hair. It is the infection that at times causes considerable trouble, not only because it retards healing but because it is not infrequent to find a persistent furunculosis as a sequela on the neck and back or other parts of the body.

The routine that I carry out in treating these patients is as follows:

1. The area surrounding the burn is washed well with soap and water.
2. An adequate area is shaved around the burn.
3. A corrosive mercuric chloride (1:3,000) compress is applied and left in place for fifteen minutes every twelve hours.
4. Débris is removed without causing bleeding.
5. The burn is dressed with a piece of gauze that has been saturated with an aqueous solution of tannic acid, 5 per cent. This gauze is held in place with hairpins.
6. If the posterior cervical glands are affected (and this is very frequent) and the patient shows any systemic reaction (fever, leukocytosis), she is put to bed. Ice caps are placed over the inflamed cervical lymph nodes for thirty minutes at intervals of an hour.
7. If furunculosis develops, the patient is treated with an autogenous vaccine.

LESTER HOLLANDER, M.D., Pittsburgh.

DIAGNOSIS OF APPENDICITIS

To the Editor:—From the list of signs under "Diagnosis of Appendicitis" (THE JOURNAL, July 13, p. 139) the following were omitted:

1. Britton's sign: *(Ann. Int. Med.)* Retraction of the right testicle while moderate pressure is made over an inflamed appendix denotes gangrene of the appendix. Retraction of the testicle is not present in the absence of gangrene and disappears after rupture of the appendix.
2. Hyperextension of the right thigh with leg extended and patient lying on left side: This is a modification of Cope's extension test, which combines with it the "mesentery pull" sign of Ott.
3. Tap on heel: With the patient supine and the legs extended but relaxed, a moderately vigorous tap on the patient's right heel will produce pain, while a similar tap on the left heel does not.
4. Leukocytosis: The white count may be high, low or normal in any stage of appendicitis, contrary to the opinion held by many surgeons.
5. Temperature: This is as variable as leukocytosis and sometimes as misleading when given too much consideration.
6. Localization of tenderness by barium sulphate enema: This increases pain by increase of pressure within the bowel and also allows palpation under fluoroscopic control.

I venture to submit these additions to an already extensive list, believing that they come within the definition of Sign, "any objective evidence of disease."

RICHARD B. STOUT, M.D., Elkhart, Ind.

EFFECTS OF BELLADONNA ON CHILD

To the Editor:—Regarding "Effects of Belladonna on Child" (Queries and Minor Notes, THE JOURNAL, July 6, p. 67), may I call attention to the remarkable fact that children, and especially infants, are frequently but little affected by belladonna. I have seen a man atropinized by 10 minims (0.6 cc.) of tincture of belladonna, while his son of 8 years was not affected by the same dose.

In the pylorospasm and habitual vomiting of infants, Haas uses from 1/50 to 1/25 grain (1.3 to 2.5 mg.) of atropine sulphate daily and has employed up to 1/16 grain (4 mg.). Ochsenius gave 1/85 grain (0.76 mg.) daily to an infant four weeks old and 1/50 grain (1.3 mg.) to one of 3 weeks. Lindbergh gave up to 1/10 grain (6.5 mg.) daily to a child of 8 months. These men report no serious untoward effects.

On the other hand, Munns, White, Brenneman and others report poisoning in infants from single doses of 1/1,000 to 1/500 grain (0.06 to 0.04 mg.) or from several such doses.

Six minims (0.36 cc.) of tincture of belladonna contains 1/340 grain (0.12 mg.) of total alkaloids, equivalent in action approximately to 1/450 grain (0.13 mg.) of atropine sulphate.

WALTER A. BASTEDO, M.D., New York.

Medical Examinations and Licensure

COMING EXAMINATIONS

AMERICAN BOARD OF OPHTHALMOLOGY: The Cincinnati examination previously announced will not be held. The next examination will be given in St. Louis, Nov. 18. *Application must be filed before Sept. 15.* Sec., Dr. William H. Wilder, 122 S. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Cincinnati, Sept. 14. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PEDIATRICS: Philadelphia, Oct. 10, and St. Louis, Nov. 20. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF RADIOLOGY: Detroit, Dec. 1-2. Sec., Dr. Byrl R. Kirklin, Mayo Clinic, Rochester, Minn.

ARIZONA: *Basic Science.* Tucson, Sept. 17. Sec., Dr. Robert L. Nugent, Science Hall, University of Arizona, Tucson. *Medical.* Phoenix, Oct. 1-2. Sec., Dr. J. H. Patterson, 826 Security Bldg., Phoenix.

COLORADO: Denver, Oct. 1. Sec., Dr. Harvey W. Snyder, 422 State Office Bldg., Denver.

GEORGIA: Atlanta, Oct. 8-9. Joint-Secretary, State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

IDAHO: Boise, Oct. 1. Commissioner of Law Enforcement, Hon. Emmitt Pfost, 205 State House, Boise.

MICHIGAN: Lansing, Oct. 8. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-3-4 Hollister Bldg., Lansing.

MINNESOTA: *Basic Science.* Minneapolis, Oct. 1-2. Sec., Dr. J. C. McKinley, 126 Millard Hall, University of Minnesota, Minneapolis.

MONTANA: Helena, Oct. 1. Sec., Dr. S. A. Cooney, 7 W. 6th Ave., Helena.

NATIONAL BOARD OF MEDICAL EXAMINERS: The examination will be held in all centers where there are Class A medical schools and five or more candidates desiring to take the examination, Sept. 16-18. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

NEW HAMPSHIRE: Concord, Sept. 12-13. Sec., Board of Registration in Medicine, Dr. Charles Duncan, State House, Concord.

NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 16-19. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

PUERTO RICO: San Juan, Sept. 3. Sec., Dr. O. Costa Mandry, Box 536, San Juan.

RHODE ISLAND: Providence, Oct. 3-4. Dir., Department of Public Health, Dr. Edward A. McLaughlin, 319 State Office Bldg., Providence.

WISCONSIN: *Basic Science.* Madison, Sept. 21. Sec., Professor Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

WYOMING: Cheyenne, Oct. 7. Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

Florida June Examination

Dr. William M. Rowlett, secretary, State Board of Medical Examiners of Florida, reports the examination held in Jacksonville, June 17-18, 1935. One hundred and three candidates were examined, 86 of whom passed and 17 failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of Arkansas School of Medicine		(1933)	76.4
University of Colorado School of Medicine		(1934)	77.8
Yale University School of Medicine		(1931) 84.2, (1932)	79.4
Emory University School of Medicine		(1932) 76.4, 83.2, 86, (1933) 79.5, (1934) 77.8, (1935) 77.3, 81.2, 82.5, 86.1, 86.6	
University of Georgia School of Medicine		(1932) 76.6, 78.9, (1935) 79.5, 80.5	
American Medical Missionary College, Chicago		(1904)	78.3
Chicago College of Medicine and Surgery		(1916)	75.3
Northwestern University Medical School		(1903)	80.4
Rush Medical College		(1930) 82.8, (1931) 79, (1934) 79.5, (1935) 83	
University of Illinois College of Medicine		(1932)	77.8
Indiana University School of Medicine		(1932)	79.6
University of Kansas School of Medicine		(1934)	84.9
University of Louisville Medical Department		(1914)	76.5
University of Louisville School of Medicine		(1934)	81.7
Louisiana State University Medical Center		(1935) 76.3,* 76.5, 81.9*	
Tulane University of Louisiana School of Medicine		(1931) 79, (1932) 80.5, (1933) 76.3, 79.7, 80.2, (1935) 79.6, 80.3, 82, 82.6, 82.8, 83.5, 84.1, 84.4	
Johns Hopkins University School of Medicine		(1932) 75.5, 83.1	
Harvard University Medical School		(1917)	79.8
Tufts College Medical School		(1918) 81.8, (1934)	84.5
University of Michigan Department of Medicine and Surgery		(1892)	75
University of Minnesota Medical School		(1930)	79.5
Barnes Medical College, Missouri		(1898)	84.2
Washington University School of Medicine		(1935)	84.5
Bellevue Hospital Medical College		(1896)	78.5
Columbia Univ. College of Physicians and Surgeons		(1919)	82.8
Duke University School of Medicine		(1933)	77.7
Cleveland Homeopathic Medical College		(1907)	77.1
Eclectic Medical College, Cincinnati		(1935)	83.8
Ohio State University College of Medicine		(1934)	83
University of Cincinnati College of Medicine		(1934)	83.7*
Temple University School of Medicine		(1932) 75, (1934)	81.1
University of Pennsylvania School of Medicine		(1933) 82.8, (1935) 79.1, 80.9	
Woman's Medical College of Pennsylvania		(1916)	77.5
Med. College of the State of South Carolina		(1932) 82, (1935)	81
University of Tennessee College of Medicine		(1931) 80.1, (1933) 75.3, 76.6, (1934) 78.5	
Vanderbilt University School of Medicine		(1930) 82, (1934) 77, 79.6	
University of Texas School of Medicine		(1932)	83.3
Medical College of Virginia		(1904)	77.6
Univ. of Virginia Dept. of Medicine		(1930) 81.4, 81.6, (1934)	81.1
Univ. of Toronto Faculty of Medicine		(1928) 79.3, (1933)	82.2
Universidad de la Habana Facultad de Medicina y Farmacia		(1925)	85.3
Licentiate of the Royal College of Physicians of Edinburgh, of the Royal College of Surgeons of Edinburgh, and of the Royal Faculty of Physicians and Surgeons of Glasgow		(1934)	75

School	FAILED	Year Grad.	Per Cent
Howard University College of Medicine		(1934)	56.6
Atlanta Medical College		(1897) 66.6, (1915)	59.3
University of Georgia School of Medicine		(1933) 71.8,	72.5
College of Physicians and Surgeons of Chicago		(1906)	72.3
Rush Medical College		(1906)	72.9
Tulane University of Louisiana School of Medicine		(1915)	65.7
Tufts College Medical School		(1933)	73.1
Barnes Medical College, Missouri		(1909)	65.9
St. Louis University School of Medicine		(1913)	73.2
Cleveland-Pulte Medical College		(1913)	64.8
Temple University School of Medicine		(1933)	70.9
Meharry Medical College		(1934)	68.6
Memphis Hospital Medical College		(1901)	64.8
University of Nashville Medical Department		(1900)	67.1
McGill University Faculty of Medicine		(1897)	69.1

* This applicant has received an M.B. degree and will receive an M.D. degree on completion of internship.

Kentucky June Examination

Dr. A. T. McCormack, secretary, Department of Health, reports the written examination held in Louisville, June 5-7, 1935. The examination covered 11 subjects and included 110 questions. Seventy-one candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
George Washington University School of Medicine		(1934)	88
University of Louisville School of Medicine		(1933) 83, (1934) 80, (1935) 78, 78, 79, 79, 80, 81, 81, 81, 81, 81, 81, 81, 81, 81, 82, 82, 82, 82, 83, 83, 83, 83, 83, 83, 84, 84, 84, 84, 84, 84, 84, 84, 85, 85, 85, 85, 85, 85, 85, 85, 85, 85, 86, 86, 86, 86, 86, 86, 86, 86, 86, 86, 87, 87, 87, 87, 88, 89, 90, 91	
Tulane University of Louisiana School of Medicine		(1934)	85
University of Cincinnati College of Medicine		(1935)	85
University of Tennessee College of Medicine		(1934)	79
Medical College of Virginia		(1934)	83

Twenty-four physicians were licensed by reciprocity from January 1 to July 24. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Georgia Medical Department		(1916)	W. Virginia
Loyola University School of Medicine		(1932)	Ohio
Rush Medical College		(1934)	Illinois
Indiana University School of Medicine		(1933)	Indiana
Washington University School of Medicine		(1931)	N. Carolina
University of Nebraska College of Medicine		(1932)	Nebraska
New York University, University and Bellevue Hospital Medical College		(1933)	New York
Ohio-Miami Medical College		(1912)	Ohio
Ohio State University College of Medicine		(1931)	Ohio
University of Cincinnati College of Medicine		(1931), (1933)	Ohio
Medical College of the State of S. Carolina		(1924), (1931)	S. Carolina
Memphis Hospital Medical College		(1905)	Arkansas
University of Tennessee College of Medicine (1931), (1932), (1933, 4), (1934) Tennessee			
Vanderbilt University School of Medicine		(1931), (1932)	Tennessee
Medical College of Virginia		(1931)	N. Carolina

New Mexico Endorsement Report

Dr. Le Grand Ward, secretary, New Mexico Board of Medical Examiners, reports 11 physicians licensed by endorsement at the meeting held in Santa Fe, April 9, 1935. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
University of Colorado School of Medicine		(1933)	Colorado
Loyola University School of Medicine		(1918)	Illinois
Rush Medical College		(1933)	Illinois
University of Illinois College of Medicine		(1933)	Illinois
Tulane University of Louisiana School of Medicine		(1927)	Louisiana
Maryland Medical College		(1901)	Connecticut
University of Maryland School of Medicine and College of Physicians and Surgeons		(1923)	Ohio
Syracuse University College of Medicine		(1904)	New York
University of Oklahoma School of Medicine		(1932)	Oklahoma
University of Memphis Medical Department		(1911)	Tennessee
Baylor University College of Medicine		(1933)	Texas

Maryland (Homeopathic) June Examination

Dr. John A. Evans, secretary, Board of (Homeopathic) Medical Examiners, reports the written examination held in Baltimore, June 11-12, 1935. The examination covered 9 subjects and included 70 questions. An average of 70 per cent was required to pass. Seven candidates were examined, all of whom passed. The following school was represented:

School	PASSED	Year Grad.	Per Cent
Hahnemann Med. College and Hospital of Philadelphia		(1934) 82.8, 86.5, 88.7, 89.5, 91.9, 93.4, (1935) 88.3	

Kansas June Report

Dr. C. H. Ewing, secretary, Kansas State Board of Medical Registration and Examination, reports the written examination held in Topeka, June 18-19, 1935. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Eighty-three candidates were examined, all of whom passed. Twelve physicians were licensed by reciprocity and 3 physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of Colorado School of Medicine		(1934)	89.6
Loyola University School of Medicine		(1935)	88.8, 90.2
Northwestern University Medical School		(1935)	87.8, 89
Rush Medical College		(1935)	89.2, 89.9
University of Kansas School of Medicine		(1931) (1933) 85.9, 86.1, (1935) 80.5, 81.8, 82.7, 84.1, 84.2, 84.7, 85.2, 85.2, 85.3, 85.4, 85.5, 85.6, 85.6, 85.6, 85.8, 85.8, 85.8, 86.2, 86.3, 86.3, 86.4, 86.6, 87, 87.1, 87.2, 87.2, 87.4, 87.5, 87.6, 87.7, 87.8, 87.9, 87.9, 87.9, 88, 88.1, 88.1, 88.1, 88.1, 88.1, 88.3, 88.4, 88.4, 88.6, 88.8, 88.9, 88.9, 89, 89.3, 89.4, 89.4, 89.5, 89.5, 89.6, 89.7, 89.8, 90, 90, 90.1, 90.2, 90.3, 90.4, 90.5, 90.9, 92.3	87.2,
Harvard University Medical School		(1931)	86.4
Washington University School of Medicine		(1934)	83.1
Univ. of Nebraska College of Med.		(1934) 85.8, 88.2, (1935)	86.4
Jefferson Medical College of Philadelphia		(1934)	91.1
Univ. of Pennsylvania School of Medicine.		(1932) 88.2, (1934)	89.1

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Rush Medical College		(1928)	Texas
University of Illinois College of Medicine		(1930)	Illinois
Indiana University School of Medicine		(1915)	Indiana
Drake University Medical Department		(1900)	Iowa
State University of Iowa College of Medicine		(1928)	Iowa
Johns Hopkins University School of Medicine		(1933)	Maryland
University of Maryland School of Medicine and College of Physicians and Surgeons		(1917)	Montana
Harvard University Medical School		(1923)	Missouri
St. Louis University School of Medicine		(1925)	Colorado
John A. Creighton Medical College		(1908)	Missouri
University of Nebraska College of Medicine		(1933)	Missouri
University of Nashville Medical Department		(1901)	Missouri

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Northwestern University Medical School		(1934)	N. B. M. Ex.
University of Minnesota Medical School		(1931)	N. B. M. Ex.
University of Nebraska College of Medicine		(1928)	N. B. M. Ex.

Book Notices

Practical Endocrinology: Symptoms and Treatment. By Max A. Goldzieher, M.D., Endocrinologist, Gouverneur Hospital, New York. Cloth. Price, $5. Pp. 326, with 41 illustrations. New York & London: D. Appleton-Century Company, Inc., 1935.

The author presents what appears at first sight to be a plausible discussion of present knowledge of endocrinology applied to clinical medicine. The work is well arranged and fairly well written. However, much of the material does not withstand critical analysis. Many conditions are described as having an endocrinologic etiology for which there is little except a theoretical basis and often not a good theoretical basis at that. Despite this fact, the casual reader may not be aware of the extent to which pure conjecture has served as source material for this book.

The author states, for instance, that the "function [of the parathyroid glands] with respect to calcium metabolism has been definitely established." This will be news to the physiologists; the fact that some of the effects of parathyroid extracts on calcium distribution in tissues and body fluids are known does not constitute adequate basis for the foregoing statement. Five hormones are listed as having been "isolated" from the anterior pituitary. "Isolation" implies separation in pure form; actually, not one of the pituitary principles has yet been obtained in a pure state. The distribution of pigment is said to be under the control of intermedin. Zondek and Krohn have shown that the extract of the pars intermedia of the pituitary, which they call intermedin, is capable of causing the expansion of chromatophores in certain species; thus intermedin may control the "distribution" of pigment within the range of expansion of a single chromatophore but not in any other sense, so far as present knowledge goes. The reader is told further that "growth of hair and its distribution on the body surface responds to stimulation by the anterior lobe of the pituitary." The rôle of the pituitary in this respect belongs in the realm of conjecture; the studies so far made on this subject are no more than suggestive.

The author claims that most of the epinephrine entering the blood stream from the adrenals is in the form of "a complex compound which is physiologically inert; . . . it reverts to activity and becomes demonstrable only after separation from its lipoid fraction." No evidence is presented for this improbable statement. Perfusion of the frog leg or rabbit ear is presented as a sensitive biologic assay method for epinephrine. Neither of these test objects is suitable for assay, as has repeatedly been demonstrated; the intestinal segment method, which is much superior, is not mentioned. Epinephrine is stated to be "the physiological antagonist of insulin"; this claim is certainly not supported by adequate evidence. Epinephrine, according to the author, "is looked upon as a general activator of physiological processes and a stimulator of practically all metabolic activities." This too will be important news to the physiologists. If epinephrine does all this, why bother with the other hormones, to which the author has devoted the major portion of the book?

The author apparently considers that he is the discoverer of the adrenal cortical hormone, although he has never presented adequate evidence that his extract will support the lives of adrenalectomized animals beyond the maximum survival period of control animals, and the announcement of Rogoff and Stewart, supported by convincing evidence, preceded his report by well over a year. The discussion of the physiology of the adrenal cortical hormone is open to severe criticism, but space does not permit detailed consideration of this section. The reader is told that "choline becomes a decisive factor in the physiological peristalsis of the intestinal tract." For this statement also there is no adequate evidence.

Thus far this review has been concerned only with the preliminary section on physiology; the remainder of the book is devoted to clinical applications of this dubious information. The ease with which in many cases the author classifies the various syndromes on the basis of a single (alleged) essential glandular disturbance must be amazing to any one acquainted with the complexities of glandular interrelationships. Yet the discussions are written with such easy dogmatism as to take the reader unawares. Detailed consideration of all this material is not feasible; to those sufficiently versed in the rudiments of endocrinology to separate the reasonable from the improbable, some of the material in the section devoted to diagnosis may be useful for reference; to others it cannot be recommended. The nomenclature of the active principles of various glands and of commercial products is confused throughout the book. It is alarming, from the standpoint of rational therapeutics, to note the nature of some of the commercial preparations recommended by the author for clinical use.

The author views with some skepticism, but nevertheless with tolerance, the highly reprehensible practice of subtotal resection or denervation of the adrenals for alleged hyperfunction of these organs in the absence of actual tumor. This practice, in view of the serious hazards to life (or, if the patient survives, to health) and the small likelihood, if any, of therapeutic benefit, deserves condemnation.

Lehrbuch der Krankenernährung. Herausgegeben von Prof. Dr. C. R. Schlayer und Dr. J. Prüfer. Teil 1: Allgemeine und spezielle Diätetik. Bearbeitet von Chefarzt Dr. H. Deicher und anderen. Teil 2: Rezeptsammlung. Von Dr. J. Prüfer und anderen. Cloth. Price, 8 marks, each. Pp. 250, with 3 illustrations; 308. Berlin and Vienna: Urban & Schwarzenberg, 1935.

This textbook, written by nine authors, consists of two parts, the first dealing with general and special dietetics, the second composed of recipes and sample menus. As the practical side of the subject forms the scope of the book, theoretical considerations, familiarizing the reader with the underlying principles of scientific dietetics, have been limited to a minimum. Due consideration has been given to the principle of certain flexibility and adaptability of standard diets to individual needs. The first part of the first volume offers a concise review of the physiology of nutrition and of the composition of common foodstuffs; it also describes the general technic of preparation of meals and discusses the problem of organization of diet kitchens in hospitals and clinics. The second part of this volume is devoted to a general discussion of diets indicated in various pathologic conditions such as obesity, undernourishment, diabetes, gastro-intestinal diseases and arthritis. The second

volume also is composed of two parts: the first furnishes a detailed composition of the diet under discussion, while the second consists of sample menus and cooking recipes, describing in detail various modes of preparation of meals. The book is highly practical both in plan and in treatment, and its splendid organization makes complete information readily available. Its greatest field of usefulness will probably be among dietitians, but the general practitioner will also find it useful. The only drawback from the standpoint of the American reader is a profusion of recipes not well known or popular in this country.

Physical Chemistry for Students of Biology and Medicine. By David Ingersoll Hitchcock, Ph.D., Associate Professor of Physiology in the Yale University School of Medicine. (With Laboratory Directions.) Second edition. Cloth. Price, $2.75. Pp. 214, with 28 illustrations. Springfield, Ill., & Baltimore: Charles C. Thomas, 1934.

This book covers the material that has been offered to medical and graduate students at Yale University for some years as a part of the work in physiology. After presenting the most fundamental aspects on the properties of gases and the laws covering them, the author follows with the logical application of these laws to liquids and solutions. In this connection, emphasis is placed on the law of mass action in solutions, the consideration of hydrogen ions, and the theories underlying the indicator and electrometric methods for the p_H estimation. Adsorption and the colloidal state are treated briefly but included are membrane potentials and equilibriums. A clear and brief chapter on gas equilibriums in blood is followed by chapters on kinetics of enzyme action, oxidation-reduction potentials, and the transformation of energy. The new edition includes instructions for twelve laboratory experiments involving the application of the osmotic pressure to cell volume hemolysis and to colloidal solutions and the relations to p_H and freezing points, indicator methods for p_H estimation, experiments on the iso-electric point, cataphoresis enzyme activity, and reaction velocity. The book is well organized. The references are arranged conveniently and the more prominent authors are honored with brief biographic footnotes. Each chapter closes with a number of problems intended for the application of the principles discussed. The book is stimulating, although probably too difficult and "too chemical" from the point of view of the majority of medical students. This valuable book might have been made more attractive to the medical student if the application of the science had been emphasized more frequently.

Epidemics and Crowd-Diseases: An Introduction to the Study of Epidemiology. By Major Greenwood, D.Sc., F.R.C.P., F.R.S., President of the Royal Statistical Society. Cloth. Price, $5.50. Pp. 409, with 8 illustrations. New York: Macmillan Company, 1935.

This book, by one of the most distinguished English epidemiologists of our day, will be warmly welcomed by American students, who have already had a foretaste of its quality in the three Herter lectures delivered by Greenwood at Johns Hopkins University in 1931 and published in 1932. In the present volume 134 pages is devoted to general principles and methods and the remainder to special illustrations. The statistical method of treating epidemiologic data is emphasized throughout, but most of the book can be read easily and with pleasure by one not versed in the higher mathematics.

The author is refreshingly outspoken on fundamental epidemiologic problems. "We do not really know why the rate of mortality for tuberculosis has fallen as it has; we have not the least idea why scarlet fever, deadly fifty years ago, is now a relatively trivial cause of mortality" (p. 65). "Without doubt, it is idle to speak of the conquest of tuberculosis" (p. 360). "We are entitled to infer that for the scarlet fever of our generation isolation cannot be shown to have conferred any advantage in the way either of prevention of infection or of reducing mortality" (p. 222). The subject of "experimental epidemiology" is condensed into ten pages, to satisfy, as the author humorously explains, his sense of proportion. There is a particularly fine chapter on the artificial immunization of man, which discusses some of the difficulties encountered in interpreting the results of inoculating large groups of the population. Three chapters on the influence respectively of nutritional, occupational and psychologic factors—which the author prefers to call procatarctic rather than predisposing causes—should be read by all sociologists. The author's point of view is shown by the following (p. 126):

> More than seventy years ago Walter Bagehot in a criticism of Charles Dickens made this comment:
>
> "He began by describing really removable evils in a style which would induce all persons, however insensible, to remove them if they could; he has ended by describing the natural evils and inevitable pains of the present state of being, in such a manner as must tend to excite discontent and repining. The result is aggravated, because Mr. Dickens never ceases to hint that these evils are removable, though he does not say by what means. Nothing is easier than to show the evils of anything. Mr. Dickens has not infrequently spoken, and, what is worse, he has taught a great number of parrot-like imitators to speak, in what really is, if they knew it, a tone of objection to the necessary constitution of human society."
>
> These parrot-like imitators have multiplied enormously in the last seventy years, and their parrot-like insistence upon research into this or that evil of modern life is sometimes a serious obstacle to real research, because, having no conception of the complexity of the problem of interrelated group factors and a simple faith in the doctrine that what is not recorded did not happen, they are apt to believe that some particular evil ("noise," for instance) is both easily remediable and quite new.

In the section on special illustrations, some readers will consider that a disproportionate amount of space (one fourth) is devoted to smallpox; but much can be forgiven for the sake of the amusing chapter on Edward Jenner and Charles Creighton. It is a little surprising to find typhus treated exclusively as a louse-borne disease and to read the statement that the United States "first experienced the disease" cerebrospinal fever in the period 1854-1875 (p. 311). The author's style is clear and readable and only three misprints have been noticed (pp. 42, 47, 317). One rubs one's eyes, however, to find the locution "facts . . . published by Topley and I" (p. 313).

Vorlesungen über Erkrankungen des Respirationssystems: Mit Ausschluss der Tuberkulose. Von Prof. H. von Hoesslin, Direktor der Inneren Abteilung des Oskar Ziethen-Krankenhauses in Berlin-Lichtenberg. Boards. Price, 4.20 marks. Pp. 150. Leipzig: Georg Thieme, 1935.

Professor von Hoesslin presents in this volume the various nontuberculous diseases of the respiratory system. A good discussion is presented on the etiology of acute and chronic bronchitis, as well as the treatment of these conditions. Considerable space is given to the diagnosis of bronchial asthma, its cause in each case being sought. The types of bronchiectasis are presented with reference to etiology. In treatment, collapse therapy is given consideration and attention is called to the fact that it is not always possible to bring the disease under control in this manner. The use of neoarsphenamine is discussed. Tumors of the lung and pulmonary syphilis are emphasized. Throughout the book, cases are cited to illustrate various points in diagnosis and treatment. There are no illustrations and no bibliography.

An Essay on the External Use of Water. By Tobias Smollett. Edited, with introduction and notes by Claude E. Jones. Reprinted from Bulletin of the Institute of the History of Medicine, Vol. III, No. 1, January, 1935. Boards. Price, $1. Pp. 82, with portrait. Baltimore: Johns Hopkins Press, 1935.

In his introduction to this eighteenth century classic in balneology, the editor points out that in Smollett's literary works there is a clear picture of contemporary medicine. Although he took a medical degree (in 1750), served his professional apprenticeship at Glasgow, was warranted surgeon's second mate in the British navy, and cultivated throughout life the friendship of physicians, he devoted himself to literature almost exclusively soon after receiving his medical degree. The adventures of his heroes, and his biographic vignettes, roguish satire and searching observations, are all much concerned with the state of medicine in his time. His comments on medicine include such items as the conduct of medical examinations, the grades in the professional hierarchy and the jealousies existing among their constituents, the dependence on blood letting for any and all of multitudinous ailments, the physical ordeals that try the mettle of the country practitioner, the growing distrust in medication, the avaricious and pretentious charlatan, who "will scramble up two pairs of steps for a fee of six livres" and who has "cured many parties that were never diseased," the life of the surgeon's apprentice, who was little more than slave to a pecunious master, and the pompous trumpery of doctors who practiced at English spas—fellows bungling in practice but equipped with all the silly accoutrements of the trade. These features and many others are presented in the editor's introduc-

tion, as well as quotations from the adventures of Peregrine Pickle, Roderick Random, Launcelot Greaves and Humphry Clinker.

Interest in mineral waters during the eighteenth century was widespread. Smollett ventured into medical writing to improve his reputation. He not only followed a popular trend but discussed a mode of treatment from which he had received great benefit. Smollett's terminology is not that of his distinguished but misdirected predecessors, yet with their concepts his own have much in common. Thus, scrophulous and scorbutic ulcers are cured "by the aspersion of common well-water"; its pressure "supports the weakened sides of the capillaries." The most unyielding tumor may be cured "by letting warm water fall from a high place, *guttatim*, or drop by drop, upon the parts." The warm bath, Smollett claims, renders the rigid fibers of our body more pliable and washes away the acrid impurities lodged therein. As an habitué of the spa, and protagonist of bathing, Smollett pleads for reform in the management and sanitary arrangements of English baths; he would have the occupants sheltered from inclement weather and diseased persons segregated, and the *bagnio* made architecturally pleasant. Smollett would have these salutary springs, "the gift of heaven," fully protected, and their usefulness extended.

The volume is attractively bound and contains the portrait of Smollett by Nathaniel Dance. The editor's commentary is supported by references and textual notes. Students of medical history will find it a welcome addition to their libraries.

Konstitution und Tuberkulose im Kindesalter. Von Dr. Kurt Klare, ärztlicher Direktor der Prinzregent-Luitpold-Kinderheilstätte-Scheidegg. Paper. Price, 4 marks. Pp. 43, with 32 illustrations. Leipzig: Georg Thieme, 1935.

This is an excellent discussion of the relationship of constitutional type to the development of tuberculosis in children. The specialist in tuberculosis now feels that the onset, type and course of a case of tuberculosis are markedly influenced not only by the infection and milieu but also by the constitutional factors. The constitution of an individual consists of a number of influences, such as habitus, physiologic properties, reactions, heredity and psyche. Of all these the reaction to various stimuli, exogenous and endogenous, is most important. Two types of children are described, the hypersensitive exudative-lymphatic, and the hyposensitive asthenic type. These are discussed with case illustrations. The booklet should interest physicians engaged in the care of tuberculous children.

Community Hygiene. By Dean Franklin Smiley, A.B., M.D., Medical Adviser and Professor of Hygiene in Cornell University, and Adrian Gordon Gould, Ph.B., M.D., Assistant Medical Adviser and Assistant Professor of Hygiene in Cornell University. Second edition. Cloth. Price, $2. Pp. 369, with 91 illustrations. New York: Macmillan Company, 1935.

This is a revised edition of a work originally published in 1929. In it, certain statistics have been substituted for old ones; some new material has been added, and old material rearranged. Those portions dealing with the problem of the cost of medical care and its causes have been rewritten. A discussion of the recent experience of Chicago in tracing an epidemic of amebic dysentery to defective plumbing is included. The book, in general, presents facts concerning the promotion and safeguarding of public health that are felt to be essential to the mental equipment of every college man and woman. It should make a useful textbook for the teaching of community hygiene.

Docteur Carlos J. Finlay: Son centenaire (1933), sa découverte (1881). Par le Professeur Francisco Dominguez, membre d'honneur de l'Académie des sciences médicales de la Havane. Paper. Pp. 302, with 6 illustrations. Paris: Librairie Louis Arnette, 1935.

Written on the centenary of Finlay's birth, this biography is a sympathetic study of the man and a vigorous statement of the belief that Finlay was the real discoverer of the essential part played by the mosquito in the transmission of yellow fever. Not only does the author give credit to Finlay for originating the hypothesis, but he holds that there is abundant evidence that Finlay did actual experimental transmissions of the disease as early as 1881 by mosquitoes that were unquestionably Aedes aegypti. Considerable space is given to the elucidation of the exact accomplishments of the American commission headed by Dr. Walter Reed. The early works of Beauperthuy are extensively quoted and discussed, with the result that much of the glamor usually thrown around this writer is dispersed. This book will be of great value especially to students of tropical medicine and of medical history.

The Woman Asks the Doctor. By Emil Novak, M.D., F.A.C.S., Associate in Gynecology, Johns Hopkins Medical School. Cloth. Price, $1.50. Pp. 189, with 11 illustrations. Baltimore: Williams & Wilkins Company, 1935.

The author set out to write a book in such a way as to talk collectively to many women in the manner in which every physician often talks to one woman in his office. The aim has been carried out admirably, as was to be expected because of the author's extensive experience as a gynecologist. As he says, there is not a single subject discussed in the book which he has not many times explained to individual women in his consulting room. Among the chapters are some devoted to superstition and folk lore of menstruation, the cause and significance of menstruation, the glands as related to female functions, puberty, the menopause, the hygiene of pregnancy, the "safe period," sterility, leukorrhea, cancer and the sex life of women. The author does not say much about the sex life because he thinks that this subject is an individual problem which should not be discussed in a popular book. The book is written in a fascinating style with many personal touches. It should be recommended to every female, young and old, for it contains an enormous amount of useful information. Furthermore it will add to the happiness of many women who think they are inferior for one reason or another and it will induce many negligent women to seek medical advice.

A Review of Certain Aspects of a Recently Recognized Disease of the Blood (Agranulocytosis or Agranulocytic Angina). By E. W. Adams, O.B.E., M.D. Ministry of Health, Reports on Public Health and Medical Subjects, No. 76. Paper. Price, 6d. Pp. 21. London: His Majesty's Stationery Office, 1935.

This pamphlet consists of a brief review of the entire question of agranulocytosis, including history, nomenclature, clinical observations, etiology, prognosis, diagnosis and treatment. It was prepared by the author for official use of the ministry of health of Great Britain. No new material is presented, but an impartial and accurate summation of the disease is made with particular reference to some of the more controversial questions, such as etiology and methods of treatment. The author accepts the amidopyrine etiology of many cases of the disease. He deplores the confusion in terminology. Based on his review of the literature, he believes that pentnucleotide therapy is the best available. He states the total number of cases in Great Britain as twenty-two. An interesting record of one recovered patient is presented, showing the profound fall in granulocytes following the administration of a single dose of amidopyrine. This publication probably represents a general summation of opinions concerning agranulocytosis in Great Britain.

Objective and Experimental Psychiatry. By D. Ewen Cameron, M.B., Ch.B., D.P.M., Physician in Charge, Reception Service, Provincial Mental Hospital, Brandon, Manitoba. Cloth. Price, $3. Pp. 271. New York: Macmillan Company, 1935.

This constitutes a brief treatise on many of the most modern concepts regarding psychiatric diseases. It is written clearly and therefore is easy to comprehend. It discusses in a detailed manner experimentation and quantitation in general in relation to psychiatric and psychologic problems. The book also suggests constructive criticisms of its own thought. There is a chapter discussing the adequacy and inadequacy of the tests of intelligence. Introversion and extraversion, word association tests, conditioned reflexes and heredity are discussed concisely. A chapter on statistics has for its conclusion that its chief value is in clarifying classifications and in promoting suggestions. Blood sugar tests, ephedrine and epinephrine, basal metabolism and blood pressure studies in relation to various mental diseases are amply discussed. There is a chapter on sedimentation rate, the hemato-encephalic barrier and p_H relations to personality. There is a chapter on the pathology of schizophrenia, manic-depressive insanity, epilepsy, senile psychosis, arteriosclerotic psychosis, dementia paralytica and mental deficiency, with a brief review of encephalographic studies in mental diseases. There is an excellent bibliography appended after each chapter which makes the book desirable for all interested in neuropsychiatry.

Medicolegal

Assault and Battery: Unlawful Practice of Medicine as Constituting.—Lexchin consulted the defendant osteopath relative to a swelling on his right leg near the ankle. The osteopath punctured the swelling. Later the patient consulted other physicians and was taken to a hospital, where his ailment was diagnosed as leukemia, myelogenous type. The patient ultimately died. The plaintiff as administratrix of his estate sued the osteopath. The declaration, in one count, charged the defendant with malpractice, and, in a second count, with assault and battery, based on the contention that the osteopath, in puncturing the swelling, unlawfully practiced surgery. The trial court gave judgment for the osteopath on both counts and the plaintiff appealed to the Supreme Court of Michigan.

There was no evidence of negligence or unskilful treatment, hence the charge of malpractice was not established. With respect to the charge of assault and battery, said the court, the act of the defendant osteopath in puncturing the swelling bore no causal relation to the death of the patient. Furthermore, the court said, the count for assault and battery in puncturing the swelling "fell flat" because the patient consented to the puncture. The plaintiff contended, however, that the consent was given under a misunderstanding of the defendant's right to perform such a surgical operation and, therefore, was void. The liability of the defendant, the court pointed out, for assault and battery cannot be predicated alone on the violation, if any, of a license law, regardless of whether he possessed and exercised the skill and care ordinarily possessed and exercised by surgeons in the community. The court found no occasion to decide whether an osteopath, duly licensed as such, may practice surgery in Michigan, but did observe that the puncturing of the swelling to relieve pressure could hardly constitute a surgical operation. The judgment of the trial court for the defendant was affirmed.—*Lexchin v. Mathews (Mich.), 256 N. W. 825.*

Dental Practice Acts: Dentistry Not Divisible into Professional and Business Departments.—The dental practice act of Wisconsin authorizes the state board of dental examiners on its own motion to make investigations and conduct hearings "in regard to the action of any licensed dentist and dental hygienist or any person who it has reason to believe is acting or has acted in such capacity within the state." Acting under this authority, the board served notices on Painless Parrmer, Inc., and A. J. Rust, a stockholder of that corporation, ordering them to appear before the board on a certain day "to give evidence." Rust and the corporation sought to restrain the board from holding the hearing, and from an adverse decision of the trial court they appealed to the Supreme Court of Wisconsin.

The constitutionality of reasonable regulations over the dental profession has been upheld, said the court. The creation of the state board of dental examiners and the conferring on them of the power of investigation and of holding hearings in certain matters specified in the statute are well within the constitutional requirements of an effective law. The legislature may enact legislation designed to accomplish the regulation of matters properly within the legislative field and may authorize an administrative commission, within valid limits, to provide rules and regulations for the administration and enforcement of the law within its expressed general purpose. This includes the right to conduct investigations and hold hearings pertinent to such purpose. The dental practice act in authorizing the board to hold hearings and to subpena witnesses violated no constitutional rights of the plaintiffs.

The plaintiffs contended, however, that the board was without jurisdiction to hold the proposed hearing because neither of them was licensed to practice dentistry. The fact that the plaintiffs do not actually engage in the performance of dental operations is not controlling, said the court. The law contemplates regulation of the profession to such an extent as to protect the public not only against the unprofessional conduct of licensed dentists but also against other persons who, by management or some other intimate relation, are in charge of those who are practicing dentistry under a single management. The method of operating a dental corporation, the securing of patients desiring dental treatment by licensed dentists, is a proper subject of regulation under a system which recognizes the practice as a profession. The contract for the dental work is consummated between the plaintiffs and the patient, the advertising by the corporation is also the act of the plaintiffs and in this manner they are holding themselves out as licensed dentists. In the case of *Painless Parker* v. *Board,* 216 Calif. 285, 14 P. (2d) 67, the court, in answer to the contention that there is a distinction between the practice of dentistry and the purely business side of the practice, stated:

> The law does not assume to divide the practice of dentistry into that kind of departments. Either one may extend into the domain of the other in respects that would make such a division impractical if not impossible. The subject is treated as a whole. If the contention of appellant be sound, then the proprietor of the business may be guilty of gross misconduct in its management and violate all standards which a licensed dentist would be required to respect and stand immune from any regulatory supervision whatsoever. His employee, the licensed dentist, would also be immune from discipline upon the ground that he was but a mere employee and was not responsible for his employer's misconduct, whether the employer be a corporation or a natural person. On grounds of public policy such a condition could not be countenanced. . . .
>
> No one would dispute the right of any person to own a dental office equipment. The question most appropriate here is whether the thing owned is used for a given purpose by a person lawfully entitled to so use it. Ownership is not the absolute test of the right of use.

The notices that were sent to the plaintiffs, said the court, were lacking in fulness of detail and contained no careful statement of the charges, if any, which the board had under consideration. This fact, however, constitutes no warrant for the granting of injunctional relief. If and when the plaintiffs are accused of violating the provisions of the dental practice act, they will be afforded the opportunity of demanding a proper complaint in that proceeding.

The Supreme Court therefore affirmed the order of the trial court, which, in effect, dismissed the action instituted by the plaintiffs.—*Rust v. State Board of Dental Examiners of Wisconsin (Wis.), 256 N. W. 919.*

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, Cincinnati, Sept. 14-20. Dr. William P. Wherry, 107 South 17th Street, Omaha, Executive Secretary.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Sky Top, Pa., Sept. 16-18. Dr. James R. Bloss, 418 Eleventh Street, Huntington, W. Va., Acting Secretary.

American Congress of Physical Therapy, Kansas City, Mo., Sept. 9-12. Dr. Nathan H. Polmer, 921 Canal Street, New Orleans, Secretary.

American Hospital Association, St. Louis, Sept. 30-Oct. 4. Dr. Bert W. Caldwell, 18 East Division Street, Chicago, Executive Secretary.

American Public Health Association, Milwaukee, Oct. 7-10. Dr. Reginald M. Atwater, 50 West 50th Street, New York, Executive Secretary.

American Roentgen Ray Society, Atlantic City, N. J., Sept. 24-27. Dr. E. P. Pendergrass, 3400 Spruce Street, Philadelphia, Secretary.

Association of Military Surgeons of the United States, New York, Oct. 3-5. Dr. H. L. Gilchrist, Army Medical Museum, Washington, D. C., Secretary.

Colorado State Medical Society, Estes Park, September 5-7. Mr. Harvey T. Sethman, 537 Republic Building, Denver, Executive Secretary.

Delaware, Medical Society of, Wilmington, Oct. 8-9. Dr. William H. Speer, 917 Washington Street, Wilmington, Secretary.

Indiana State Medical Association, Gary, Oct. 8-10. Mr. T. A. Hendricks, 23 East Ohio Street, Indianapolis, Executive Secretary.

Kansas City Southwest Clinical Society, Kansas City, Mo., Oct. 7-10. Dr. Ralph R. Coffey, 1103 Grand Avenue, Kansas City, Mo., Secretary.

Kentucky State Medical Association, Louisville, Sept. 30-Oct.3. Dr. A. T. McCormack, 532 West Main Street, Louisville, Secretary.

Michigan State Medical Society, Sault Ste. Marie, Sept. 23-25. Dr. Burton R. Corbus, 313 Metz Building, Grand Rapids, Acting Secretary.

Mississippi Valley Conference on Tuberculosis, Madison, Wis., Sept. 12-14. Mr. A. W. Jones, 613 Locust Street, St. Louis, Secretary.

Ohio State Medical Association, Cincinnati, Oct. 2-4. Mr. C. S. Nelson, Hartman Theatre Building, Columbus, Executive Secretary.

Oregon State Medical Society, Gearhart, Sept. 19-21. Dr. Blair Holcomb, Stevens Building, Portland, Secretary.

Pennsylvania, Medical Society of the State of, Harrisburg, Sept. 30-Oct. 3. Dr. Walter F. Donaldson, 500 Penn Avenue, Pittsburgh, Secretary.

Southern Minnesota Medical Association, Austin, Aug. 25-26. Dr. Harold C. Habein, 102 Second Avenue S.W., Rochester, Secretary.

Utah State Medical Association, Logan, September 5-7. Dr. George N. Curtis, Judge Building, Salt Lake City, Secretary.

Virginia, Medical Society of, Norfolk, Oct. 15-17. Miss A. V. Edwards, 1200 East Clay Street, Richmond, Secretary.

Wisconsin, State Medical Society of, Milwaukee, Sept. 17-20. Mr. J. G. Crownhart, 119 East Washington Avenue, Madison, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Digestive Diseases and Nutrition, Chicago

2: 209-274 (June) 1935

*Intestinal Tuberculosis: Clinical, Roentgenologic and Pathologic Study of Two Thousand and Eighty-Six Patients Affected with Pulmonary Tuberculosis. E. Granet, New York.—p. 209.

Stomach Lavage Microscopy as an Aid in Diagnosis of Biliary Tract Disease. H. A. Rafsky, New York.—p. 214.

Clinical Interpretation of Duodenal Diverticulum. H. H. Riecker, Ann Arbor, Mich.—p. 217.

Mechanism of Delay in Gastric Emptying Time Caused by Anoxemia. G. Crisler, E. J. Van Liere and I. A. Wiles, Morgantown, W. Va.—p. 221.

*Quantitative Estimation of Enzyme Concentration in Duodenal Fluids: Practical Clinical Method. C. W. Lueders, Philadelphia.—p. 224.

Origin and Significance of Blood Serum Enzymes. L. A. Crandall Jr., Chicago.—p. 230.

Insulin-Glucose Therapy in Heart Disease. E. S. Nichol, Miami, Fla.—p. 236.

Acid-Base Value and Assimilability of Fruit Juices. I. N. Kugelmass, New York.—p. 242.

*New Concept of Ménière's Disease and Its Response to Antiretentional Therapy. E. Foldes, New York.—p. 243.

Carcinoma of Body of Pancreas: Clinicoroentgenologic Diagnosis. M. G. Vorhaus, New York.—p. 248.

Diverticulum of Stomach. E. B. Freilich, G. Danelius and G. C. Coe, Chicago.—p. 252.

Treatment of Hemorrhage Caused by Peptic Ulcer. G. A. Hendon, Louisville, Ky.—p. 255.

Factors Pertinent to Reduction of Mortality in Cholecystectomy. M. Behrend, Philadelphia.—p. 258.

Intestinal Tuberculosis.—Granet believes that tuberculous enteritis is a common disease and is present in most patients with advanced pulmonary tuberculosis. In an attempt to delimit criteria that would facilitate early diagnosis and better therapeutic results, 2,086 tuberculous patients were studied clinically and pathologically. This study was limited to moderately advanced and advanced nontoxic patients with pulmonary tuberculosis. Roentgenoscopy of the gastro-intestinal tract revealed lesions in 37 per cent. Postmortem check up showed a relatively high degree of accuracy for this method of diagnosis. A history of gastro-intestinal symptoms was found to be unreliable as a diagnostic aid, as symptoms were absent in the majority of positive enteritis cases. Furthermore, the proportion of patients complaining of gastro-intestinal symptoms was only slightly greater in the positive enteritis group than in the negative patients. A study of the sputum showed tubercle bacilli in practically all positive enteritis cases. Similarly, necropsy revealed pulmonary cavities in almost all fatal cases of enteritis. Sigmoidoscopy revealed rectal involvement in only two of 150 patients examined.

Estimation of Enzyme Concentration in Duodenal Fluids.—Lueders describes methods for the determination of trypsin, lipase and amylase in duodenal fluids. The modification by Hollander of his previous methods for the estimation of tryptic and lipolytic activity has proved of distinct value during the last four years of its application. The test for amylase, with but slight modification, has proved satisfactory during the last fifteen years. The author states that any clinician trained in the Lyon technic of nonsurgical duodenal drainage should find the methods described simple, rapid and sufficiently accurate. As soon as some such practical procedure for the estimation of pancreatic enzymes in duodenal fluids has been widely accepted as reliable, it may well give fresh impetus to further investigation of secretory dysfunction and diseases of the pancreas. It should also prove a valuable routine addition to the diagnostic survey of patients with any disease involving the gastro-intestinal tract as well as those with disorders of nutrition, digestion and assimilation. Occasionally, normal values for enzyme concentration were found in one or more of the duodenal fractions of the diseased group, but it was rare to obtain normal concentration of the three enzymes as in the normal groups. In each of five cases of diabetes the pancreatic amylase was low in amount, and in every extraction of duodenal fluid.

New Concept of Ménière's Disease.—Foldes says that there seems to be a striking similarity in the pathogenesis of Ménière's disease to epilepsy, eclampsia of pregnancy, eclampsia of infancy, migraine, angina pectoris, bronchial asthma, the allergic diseases and gout. These diseases manifest themselves in the form of attacks which appear to be due to a retention of water and minerals that is local and temporary, rather than generalized and continuous. The attacks cease when the retained liquids disappear from the respective organ. For the treatment of this group of diseases an antiretentional therapy has been developed which employs a diet based on the recognition of the fact that all food elements, such as proteins, carbohydrates, fats, water, minerals and vitamins, influence the water and mineral metabolism. The author found that, while the antiretentional diet in itself, or together with the administration of phenobarbital, is ineffective, the addition of quinine sulphate, phenobarbital and the extract of nux vomica to this diet, the protein content of which is slightly lowered, is followed by a complete disappearance of the attacks within a few days, with no relapses observed thus far. A complete abolition of the attacks such as he observed in his four cases can hardly be ascribed to the medication in itself. The results observed, he believes, are not attributable to the administration of quinine sulphate by itself but to the concerted action of quinine sulphate and the diet.

American Journal of Medical Sciences, Philadelphia

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Basophilic Hyperplasia of Pituitary in Essential Hypertension. I. Pardee, New York.—p. 1.

Syndrome Simulating Diencephalic Stimulation Occurring in Patients with Essential Hypertension. I. H. Page, New York.—p. 9.

Effect of Adrenalin Injection on Blood of Patients With and Without Spleens. A. J. Patek Jr. and Geneva A. Daland, Boston.—p. 14.

Extreme Tachycardia in the New-Born: Report of Case. L. E. Farr, New York, and M. E. Wegman, New Haven, Conn.—p. 22.

Study of Value of Insulin in Undernutrition. R. H. Freyberg, Ann Arbor, Mich.—p. 28.

Fulminating Hemorrhagic Encephalitis. A. Levinson and O. Saphir, Chicago.—p. 42.

*Carbohydrate Metabolism in Human Hypothyroidism Induced by Total Thyroidectomy: III. Case of Diabetes Mellitus Treated by Total Ablation of Normal Thyroid Gland. A. Rudy, H. L. Blumgart and D. D. Berlin, Boston.—p. 51.

Variable Auscultatory Signs of Pulmonary Cavities. R. A. Bendove, New York.—p. 60.

Pneumonias Due to Pneumococcus Type VIII. J. G. M. Bullowa, New York.—p. 65.

Giardia Infestation of Gallbladder and Intestinal Tract. R. M. Calder and R. H. Rigdon, Durham, N. C.—p. 82.

Long Continued Vaccine Therapy as Cause of Amyloidosis. H. A. Reimann and C. M. Eklund, Minneapolis.—p. 88.

Influence of Muscular Activity on Physiologic Leukocytosis. C. J. Leslie and R. L. Zwemer, New York.—p. 92.

Schilling Count in Fifty-Nine Cases of Chronic Arthritis with Correlated Sedimentation Rate in Thirty Cases. C. L. Steinberg, Rochester, N. Y.—p. 98.

Incidence of Infection with Intestinal Protozoa in Minnesota. P. Kabler, Minneapolis.—p. 103.

*Heterophile Antibody Test in Leukemia and Leukemoid Conditions. G. L. Weinstein and T. Fitz-Hugh Jr., Philadelphia.—p. 106.

Pernicious Anemia and Malignant Neutropenia: Case Report. R. F. Herndon, Springfield, Ill.—p. 113.

Carbohydrate Metabolism in Hypothyroidism Induced by Thyroidectomy.—Rudy and his collaborators cite a case of severe uncontrollable diabetes mellitus complicated by tuberculosis of the lungs, in which total ablation of the thyroid was performed. Before operation, the basal metabolic rate was +7 per cent and the patient showed no evidence of hyperthyroidism. The extirpated thyroid tissue was found normal on gross and microscopic examination. The diabetic condition, which could not be adequately controlled prior to operation under optimal conditions with diet and an average insulin dosage of 95 units daily, was readily controlled by diet and 44 units of insulin daily after hypothyroidism developed. A level of hypothyroid-

ism at which the patient remained free from any unpleasant symptoms of myxedema was maintained by small doses of thyroid. The authors suggest that the treatment of hypothyroidism with small doses of thyroid as applied in this patient may be useful also in some patients with diabetes and spontaneous myxedema. As evidence that the reduction in insulin requirements in their patient was due to the hypothyroid state, they found that the administration of thyroid sufficient to restore the preoperative metabolic level resulted in relapse of the patient's diabetic condition to the preoperative status. Total thyroidectomy is not advised in the treatment of diabetes mellitus except in the rare case of severe diabetes that cannot be controlled adequately by the application of all known therapeutic measures.

Heterophile Antibody Test in Leukemia.—Weinstein and Fitz-Hugh found the heterophile antibody titer in the serums of sixteen cases of leukemia to be uniformly and repeatedly at a low level (zone 1) regardless of the stage and type of the disease. One case of acute myelogenous leukemia was found to be in zone 2. The patient, however, had received twenty-eight blood transfusions. This constant finding may be of value in ruling out the diagnosis of leukemia in any case in which a high heterophile antibody titer is found. A low or normal titer of heterophile antibody was found also in three cases of Hodgkin's disease, five of lymphosarcoma, five of polycythemia vera, four of agranulocytic angina and a number of miscellaneous cases including typhoid, simple adenitis, syphilis, tuberculosis and anemia. A high titer (zone 3) was found in serum sickness and acute infectious mononucleosis, thus confirming the reports of Paul, Bunnell, Davidsohn and others. The parenteral administration of horse serum did not produce a rise in the heterophile antibody titer in five cases of chronic lymphatic leukemia. This is in accord with previous evidence. A similar failure of increase of heterophile antibody titer following horse serum injections was found in one case of "atypical" Hodgkin's disease and in two of lymphosarcoma, suggesting the possibility of a biologic relationship of these conditions to lymphatic leukemia. The parenteral administration of horse serum in three cases of chronic myelogenous leukemia produced a marked rise in heterophile antibody titer similar to that occurring in nonleukemic individuals. This is not in accord with previous evidence and suggests the possibility of a real biologic difference between myelogenous leukemia on the one hand and the lymphatic group on the other.

American J. Obstetrics and Gynecology, St. Louis

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*Rôle of Blood Transfusion in Treatment of Obstetric Hemorrhage. W. J. Dieckmann and E. F. Daily, Chicago.—p. 1.

Surgical Treatment of Ovarian Dysfunctions: Clinical and Pathologic Study. M. R. Robinson, New York.—p. 18.

Management of Prenatal and Postnatal Cervix. M. A. Castallo and T. L. Montgomery, Philadelphia.—p. 37.

*Veratrum Viride in Treatment of Eclampsia. R. D. Bryant, Cincinnati. —p. 46.

Study of Fetal Mortality in Patients with Organic Heart Disease. H. M. Teel, Boston.—p. 53.

Hemorrhage in Late Pregnancy. P. H. Smith, Evanston, Ill.—p. 62.

Some Problems in Pregnancy and Diabetes: Analysis of Twenty Pregnancies in Seventeen Patients and Preliminary Report on Two Hundred and Thirty-Eight Cases in Literature. D. W. Kramer, Philadelphia.—p. 68.

Cancer of Uterus in Childhood. H. A. Lockhart, Cedar Rapids, Iowa. —p. 76.

Mercurochrome to Secure Vaginal Antisepsis During Labor: Report of Six Thousand Cases. H. W. Mayes, Brooklyn.—p. 80.

*Treatment of Elusive Ulcer of Bladder by Application of Pure Phenol. N. P. Sears, Syracuse, N. Y.—p. 85.

Use of Dilaudid in Gynecologic Surgery. T. K. Brown and H. L. Kleine, St. Louis.—p. 89.

Ectopic Pregnancy: Results of Immediate Operation and Value of Spinal Anesthesia. H. Koster and W. I. Sheinfeld, Brooklyn.—p. 93.

Occiput Posterior: Statistical Study from the Chicago Maternity Center. J. G. Crotty, Cincinnati.—p. 97.

Cesarean Section: Factors Influencing Mortality: Analysis of Two Hundred and Forty-Three Cases. A. T. Bowers, Dayton, Ohio.— p. 103.

Fibromyoma of Cervix Uteri: Report of Case. V. S. Counseller and D. C. Collins, Rochester, Minn.—p. 108.

Tubal Gestation: Statistical Study Based on Three Hundred and Nine Cases. C. H. Tyrone, S. A. Romano and C. G. Collins, New Orleans, —p. 112.

Melanoma of Urethra. A. H. Rosenthal, Brooklyn.—p. 115.

Intravenous Anesthesia with Evipal Soluble. A. Holman and A. Mathieu, Portland.—p. 118.

*Routine Treatment of Gonorrhea in Females: Nonantiseptic Method. B. Notes, Washington, D. C.—p. 121.

Observations on Normal Sex Ratio of Albino Rats and Their Artificial Variation. M. A. Varzhabedian, Chicago.—p. 124.

Simple Roentgenographic Method for Accurately Determining True Conjugate Diameter of Pelvis. S. F. Weitzner, New York.—p. 126.

Abdominal Pregnancy with Removal, After Eighteen Years, of a Six Months Lithopedion. A. W. Voegelin, Philadelphia.—p. 129.

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Factor of Birth Trauma in Cancer of Uterine Cervix. Catharine Macfarlane, Philadelphia.—p. 133.

Torsion of Pregnant Uterus in Patients with Kyphotic Pelvis. B. Rabbiner, Brooklyn.—p. 136.

Squamous Cell Carcinoma of Cervix: Adenocarcinoma of Fundus of Uterus. M. T. Goldstine, Chicago.—p. 137.

Full Term Unilateral Tubal Twin Pregnancy. J. A. Ferguson and I. S. Otis, Meriden, Conn.—p. 139.

New Instrument for Accurate Reading of Measurement of Diagonal Conjugate. R. G. Douglas, New York.—p. 141.

Sarcoma and Adenocarcinoma of Body of Uterus: Adenocarcinoma of Cervix. M. T. Goldstine, Chicago.—p. 143.

Nonpolypoid Sarcoma of Cervix Uteri. M. T. Goldstine, Chicago.— p. 145.

Bloodless Circumcision of the New-Born. H. S. Yellen, Buffalo.— p. 146.

New Colposcope. H. O. Maryan, Chicago.—p. 148.

Blood Transfusion in Treatment of Obstetric Hemorrhage.—According to Dieckmann and Daily, obstetric hemorrhage is responsible for more than 10 per cent of the maternal deaths. The mortality has not decreased in the last twenty years despite the use of blood transfusions. The mortality rate from obstetric hemorrhage can be lowered only if sufficient blood is transfused to raise and maintain the hemoglobin to approximately 10 Gm. per hundred cubic centimeters of blood. The transfusion must be adequate in amount and must be given within a short time after the hemorrhage. Further transfusions may be given within a period of hours or spread over several days, depending on the amount of blood required and the clinical condition of the patient.

Treatment of Eclampsia.—Bryant treated 121 cases of eclampsia as follows: From 5 to 15 minims (0.3 to 1 cc.) of an extract of veratrum viride is given hypodermically immediately after the first convulsion. This is repeated as often as is necessary to keep the pulse below 80 or the blood pressure at least 20 mm. below the convulsive level. The usual case requires from one to three doses at intervals of from ten to fifteen minutes, then doses every one, two or three hours until the patient is well over the acute stage. Oral administration of slightly larger doses of from 10 to 20 minims (0.6 to 1.3 cc.) may replace the hypodermic injections as the patient recovers. From 10 to 20 cc. of a 50 per cent solution of magnesium sulphate is given by deep injection immediately following the first dose of veratrum. This is repeated in smaller doses of from 2 to 5 cc. every six hours, three times a day, and twice a day on successive days as the acute attack subsides. From one-half to 1 ounce (15 to 30 cc.) of saturated solution of magnesium sulphate is given by mouth twice a day. Fluids are forced by mouth as soon as the patient is conscious. In the meantime from 2,000 to 3,000 cc. of physiologic solution of sodium chloride is given by hypodermoclysis if the patient is over the convulsive stage but still comatose. Intravenous injection of from 100 to 500 cc. of from 5 to 50 per cent dextrose is frequently used. Alkalis are given by mouth to conscious patients in doses of from 60 to 120 grains (4 to 8 Gm.) from three to six times a day. Fruit juices, well sweetened, are administered at frequent intervals. A low protein diet, consisting chiefly of fruit juices, vegetables and bread, is allowed as soon as the patient feels hungry and is apparently in no immediate danger of convulsions. Chloral, bromides or one of the barbiturates is given in appropriate doses to those patients who become restless during recovery from the acute stage. Ether is used sparingly at the time of delivery. In the antepartum case, no attempt is made to induce labor until the patient is well over the acute stage or shows marked resistance to treatment. In the patient who responds to treatment, labor is induced from twenty-four to seventy-two hours after the acute attack has subsided. In this series there were seventy-one patients with convulsions before delivery. The usual precautions are used during the convulsions. The patient is not restrained during a convulsion, except so far as is needed to

prevent self injury by falling. No anesthetic is used for the control of the convulsions. In three cases magnesium sulphate solution was injected intraspinally. Two patients received magnesium sulphate solution intravenously. The effect of the hypodermic injection of a therapeutic dose of veratrum viride is startling. The blood pressure falls rapidly, sometimes going as low as 50 systolic. This marked fall is transitory but is followed by a more or less prolonged period during which the pressure is well below the original level. The heartbeat is slowed to 40 per minute in some patients but soon picks up and remains at from 60 to 80 until the effect of the drug has worn off. The pulse rate usually follows the blood pressure level fairly closely. Atropine or morphine or both are antidotes for veratrum viride. Vomiting is an early effect. The degree of vomiting varies with the individual susceptibility of the patient. The respiration is always slowed considerably, but never to such a degree as to be harmful. The individual susceptibility to the drug is very marked, and for this reason treatment cannot be absolutely standardized. In the author's cases, convulsions occurred before delivery in seventy-one. Of fifty postpartum patients, twenty-three delivered and had convulsions before admission. The total number of maternal deaths was twelve. Of the patients, 60 per cent had no convulsions after treatment was started, 15.8 per cent had only one convulsion and 24.2 per cent had more than one convulsion.

Treatment of Elusive Ulcer of Bladder.—Sears treated four female patients for elusive ulcer of the bladder with the following technic: Ten per cent cocaine is applied to the urethra for five minutes. The bladder is emptied by catheter, the patient placed in the correct knee-chest posture, the vaginal orifice opened to allow air to enter the vagina, and a Kelly cystoscope introduced into the bladder. The lesion is located and studied, and, after aspiration of all the urine from the bladder vertex, is thoroughly swabbed with pure phenol. If any of the solution touches the normal mucosa it is immediately neutralized by an applicator saturated with alcohol. After the ulcer is thoroughly painted, the patient remains in the knee-chest posture with the cystoscope in place for a few seconds until the action of the phenol has taken place. As the cystoscope is withdrawn, if the trigon and urethra are inflamed, they are painted with 10 and 5 per cent silver nitrate, respectively. The air is then allowed to escape and the patient to go about as usual. There is often some increased discomfort for a few days, about which the patient should be warned. The lesion is inspected in two weeks and may or may not require more treatment. In all cases thorough swabbing of the ulcer caused but little distress and no complications and was followed by prompt and prolonged relief.

Treatment of Gonorrhea in Women. — Notes describes the clinical treatment of 2,129 positive cases of gonorrhea of the female genitalia over a period of four years. Positive diagnosis was based on smears with gram-negative intracellular diplococci having the morphology of the gonococcus combined with objective clinical signs. Extracellular gram-negative diplococci were considered suggestive. Each patient was observed two months for recurrence of positive smears. The basis of treatment in the beginning was drainage and antisepsis. In 1931 the antiseptics used in treatment included iodine and compound solution of cresol as douches and by topical applications, and of 384 cases admitted four were discharged. In 1932 the antiseptics used included iodine, compound solution of cresol, mercurochrome and 10 per cent silver nitrate, and of 522 patients admitted eighteen were discharged. In 1933 of 546 cases admitted forty-eight were discharged. In August 1933 treatment on the bases of creation of local reaction and drainage with the omission of antiseptics was begun as follows: All cervices with cervical glands functioning were cauterized one or more times with the electrocautery at intervals of two or more months in order to cause local reaction and to give better drainage of the active focus. The urethral meatus and the cervix were treated weekly with applicators saturated with 25 per cent solution of silver nitrate. Five per cent sodium bicarbonate douches were taken by the patient at home twice daily. Nightly instillations of 1 drachm (4 cc.) of 1 per cent lactic acid jelly were made by nozzle to the vaginal vault in order to promote the normal bacterial flora and to get rid of secondary invaders, which cause desquamative vaginitis. During the first six months of this period, clinical improvement and increase in negative smears were marked. The author concludes that antiseptics should be abandoned in the treatment of gonorrhea in women.

Annals of Surgery, Philadelphia

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Transplantation of Toes for Fingers. O. V. Labunskaya, Leningrad, U. S. S. R.—p. 1.
*Postoperative Pulmonary Atelectasis: Report of Eleven Cases. H. E. Snyder, Winfield, Kan.—p. 5.
*Ganglionectomy for Hyperhidrosis. F. L. Pearl and N. H. Shapiro, San Francisco.—p. 16.
*Splanchnic Nerve Section in Juvenile Diabetes: II. Technic and Postoperative Management. G. de Takáts, Chicago.—p. 22.
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Carcinoma of Rectum: Predisposing Factors and Diagnosis of Rectal Cancer (Discussion of Allergy). E. G. Martin, Detroit.—p. 56.
Id.: Pathology of Intestinal Carcinoma. J. Felsen, New York.—p. 61.
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Id.: Two Stage Operation for Rectal Cancer. F. C. Yeomans, New York.—p. 68.
Id.: Gold Radon Seeds in Rectal Cancer. G. E. Binkley, New York.—p. 72.
Id.: External Irradiation in Rectal Cancer. J. J. Duffy, New York.—p. 77.
Anal Anatomy with Reference to White Line of Hilton and Pecten of Stroud. R. I. Hiller, Milwaukee.—p. 81.
Fracture of Anterior Inferior Spine of Ileum (Sprinter's Fracture). J. R. Gallagher, Pottstown, Pa.—p. 86.
Management of Depressed Fractures of Skull and Old Skull Defects. E. S. Gurdjian, Detroit.—p. 89.
*Fractures of Bodies of Vertebrae. K. Speed, Chicago.—p. 102.
Arthroplasty of Hip and Preservation of Its Stability. F. H. Albee, New York.—p. 108.
Traumatic Knee: Statistical Survey of One Hundred and Forty-Six Cases. H. V. Spaulding, New York.—p. 115.
Internal Derangements of Knee. W. Darrach, New York.—p. 129.

Postoperative Pulmonary Atelectasis. — Snyder states that it is generally agreed that the determining factor in the production of pulmonary atelectasis is bronchial obstruction by mucus. All conditions that tend to reduce the vital capacity of the lung, or tend to increase the amount or viscosity of bronchial mucus, or hinder its expulsion, predispose to pulmonary atelectasis. In a typical case of severe, massive atelectasis the onset occurs within forty-eight hours of operation. The symptomatology consists in sudden elevation in temperature, pulse and respiratory rate, dyspnea, cyanosis, coughing and severe pain in the chest or in the abdomen. Expansion of the chest is limited or absent over the affected area. Percussion will establish the position of the heart borders displaced to the side of the lesion. Early there is often hyperresonance over the affected lung, but, as the bronchioles and alveoli become filled with secretion, dulness will be found. At first the breath sounds are absent or diminished and there are no râles, but as air again gains access there may be tubular or amphoric breathing and moist crackling or bubbling râles. In the course of a few minutes to many days the lung expands, the heart returns to normal position and breath sounds can be heard over the affected lung, with many moist râles. Most cases of pulmonary atelectasis are generally less severe and are not recognized unless the chest is thoroughly studied daily, or twice daily, following operation. In severe cases the roentgen observations are elevation of the diaphragm on the affected side, narrowing of the chest on that side, increased obliquity of the ribs, narrowing of intercostal spaces, a displacement of the trachea, heart and mediastinum to the affected side and a variable amount of shadow in the affected lung area. Early there may be little or no increase in density over the lung; later the shadow may be dense and homogeneous. Roentgen examination is not always essential in the diagnosis and treatment of this condition. The author refers to eleven patients, four of whom had heart disease. Two patients in the group had syphilis. In seven of the cases, atelectasis developed within

the first thirty-six hours. There were three cases following appendectomy, three following cholecystectomy, two following cesarean section, two following herniorrhaphy and one following amputation through the thigh. There were two deaths. The two patients who died had heart disease and a mitral lesion. Local and spinal anesthesia do not decrease the incidence of pulmonary atelectasis. Large doses of morphine and other sedatives before and after operation should be avoided. The operating time should be as brief as possible. Carbon dioxide, 10 per cent, and oxygen should be administered at intervals during all spinal anesthesias to avoid acapnia, for five minutes at the end of all local and general anesthesias and for five minutes, three or four times daily, for at least forty-eight hours following all abdominal operations. The patient's position should be changed every three or four hours after operation. Deep breathing at frequent intervals should be encouraged. Dilatation of the stomach should be avoided by using the nasal tube at the first indication of gastric distention. The author's cases were treated by the postural method of Sante. This consists in rolling the patient back and forth on the uninvolved side. Percussion over the involved lung facilitates the expulsion of mucus. The patient is not left in this position for long, as atelectasis may then develop in the other lung. Carbon dioxide and oxygen induce deeper breathing and probably a widening of the lumens of the bronchi and bronchioles. They should be employed only in conjunction with the postural method of treatment. If they are administered with the patient lying on the affected side, it may lead to firmer incarceration of the obstructing mucus.

Ganglionectomy for Hyperhidrosis.—Pearl and Shapiro state that conditions of sweating which interfere with the health, occupation and peace of mind or the continued happy existence of an individual justify surgical intervention. Sympathetic ganglionectomy at the proper level will produce a total inhibition of sweating in the desired regions. When anhidrosis is produced, vasomotor paralysis occurs in the identical areas of distribution, as evidenced by a rise of surface temperature. It is impossible to influence separately the fibers for sweating and those for vasoconstriction by surgical means. The accompanying release of normal vasoconstriction gives no uncomfortable symptoms. The authors report a case in which a woman, aged 22, obtained complete relief from excessive sweating following sympathetic ganglionectomy and trunk resection. The left inferior cervical and first, second and third thoracic sympathetic ganglions were exposed by a posterior muscle splitting approach and freed of all connecting branches, and the trunk was removed from above the inferior cervical to below the third thoracic ganglion. There was an immediate rise of surface temperature of the left upper extremity to the normal vasodilatation level and a complete absence of sweating of the left upper extremity and the homolateral half of the head, face and upper part of the thorax, anteriorly and posteriorly. The rise of surface temperature and the absence of sweating persisted in the areas affected until fourteen months after operation. The amount of perspiration of the unaffected regions was greater than before operation. The delineation of areas of anhidrosis was obtained by the application of external heat. Four months after operation cervicodorsal ganglionectomy, ramisection and trunk resection were carried out on the right side to the same extent as on the left. Fourteen months after the first operation, and ten months after the second operation, there has been no perceptible evidence of sweating even after long exposure to external heat.

Splanchnic Nerve Section in Juvenile Diabetes.—De Takáts describes a supradiaphragmatic retropleural approach to the splanchnic nerves. With the patient in a semilateral position, a paravertebral incision is made, four fingerbreadths from the midline, starting at the level of the angle of the scapula and curving laterally over the tenth intercostal space for a distance of from 5 to 6 cm. The incision transects the long muscles of the back and exposes the tenth and eleventh ribs, which are subperiosteally resected for a length of about 6 cm., the midline being approached as close as possible. To facilitate the approach to the lateral surface of the vertebrae, the intercostal vessels are doubly ligated and cut. The intercostal nerves may be preserved but may also be transected without any harm. The distal stump of the tenth nerve is transfixed with a fine suture of black silk and wrapped in a moist gauze compress. The endothoracic fascia, which covers the pleura, is carefully incised and dissected away from the pleura throughout the length of the incision. After the pleura has been stripped away from the proximal stumps of the ribs, the remaining proximal stump and some of the transverse process are removed. The pleura is gently stripped until the thoracic sympathetic trunk appears surrounded by loose connective tissue and fat. The trunk may be identified by the bulbous swelling of its ganglions. On dissection of the pleura farther forward, the major splanchnic nerve appears, showing multiple connections with the sympathetic chain. After procaine hydrochloride anesthesia, the thoracic chain and the splanchnic nerve are excised. To prevent regeneration of the major splanchnic nerve, the proximal stump of the nerve is implanted into the distal stump of the tenth intercostal nerve. After complete hemostasis, the pleura is allowed to fall back in place, the muscles are carefully sutured and the skin is closed. No drainage is left in the wound. The operation has been performed by the author so far three times, the patients being young persons with diabetes. An adequate dextrose and fluid intake, which is essential in any operation for diabetes, is carefully maintained. A dextrose solution of 5 per cent is given in a subcutaneous drip, 1,000 cc. in about five hours, which may be started during the operation, and another thousand cubic centimeters in the afternoon. About 2,000 cc. of a 5 per cent dextrose solution will supply 100 Gm. of sugar. Another thousand cubic centimeters of Ringer's solution is given during the night, thus furnishing 3,000 cc. of fluids during twenty-four hours. Of the author's three cases, only the third is regarded as a thorough test of the value of the operation because of improper selection in one instance and partial technical fault in the second. In the third case a decrease of 50 units of insulin a day was accomplished. A final evaluation of results with respect to the diabetic state of the patients who were operated on is to be made.

Fractures of Bodies of Vertebrae.—Speed states that the main mechanism of fracture of the corpus vertebrae is compression. If no flexion accompanies compression, the body is crushed and lessened in height uniformly, the posterior border in lateral view being reduced equally with the anterior border. The corpus tends to broaden laterally and may be separated into two or more fragments, one of which may push back into the canal to compress the cord, while the other may be displaced forward as far as it can go under the restraint of the anterior spinal ligament. If flexion forward and compression act together, a wedge-shaped piece, varying from the size of a pea to nearly the whole anterior portion of the body, is broken off from the anterior superior border of the corpus, the plane of separation extending diagonally down and forward. The main portion of the body, especially the posterior, retains its height or diameter and the spinal canal is protected by the intact posterior longitudinal ligament, while the anterior height is diminished with accompanying displacement forward of the whole spinal segment above. When compression is accompanied by lateral flexion, the amount of comminution may be increased, one side of the body is crushed down more than the opposite side, and displacement laterally into subluxation may be found. The body breaks into fragments easily through its weaker center, the seat of venous sinusoids. Other adjacent bodies may suffer similarly. The first roentgenologic study must compare bodies immediately adjacent above and below the injured segment to search for breaking down of the bone along the superior or inferior border with early increased density, suggesting impaction of the cancellous tissue into itself. Later changes in bone density indicate aseptic necrosis or, if accompanied by new bone formation, may require two to four months for roentgenographic demonstration and depend on the amount of blood extravasation at the time of injury, the period of immobilization used in treatment and the secondary postural changes in the spine. All types of reduction by means of hyperextension with any required lateral flexion may be followed by plaster-of-paris dressings. Each fracture of the vertebral body should be studied roentgenologically before reduction to determine whether it was caused by pure compression in the long axis or by compression flexion with a fragment broken off the superior surface of the body and dis-

placed forward and downward. The third class of combined flexion and compression with lateral displacement may be recognized often by graver cord pressure symptoms. If the fracture is the result of compression flexion with a relatively small fragment broken off the upper anterior border of the body, reduction by hyperextension by Jones's method or on a spinal bed that may be rapidly elevated into hyperextension at the site of fracture, followed by an ambulatory plaster-of-paris torso jacket for ten to fourteen weeks, is sufficient treatment. For patients who have sustained great compression with broadening or lateral gross displacement and uniform loss of height of the corpus, reduction by hyperextension plus traction in the long axis of the body is required in most cases. This is best done on a spinal bed with traction on head and feet. A plaster bed or torso corset embracing the thighs may be used, depending on the amount of dislocation laterally. The patients should be kept supine on the plaster for from eight to fourteen weeks. Later they may be fitted with a plaster-of-paris corset or back brace, which is worn until roentgenologic demonstration of healed bone trabeculae has been made.

Archives of Dermatology and Syphilology, Chicago

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*Excretion of Mercury After Clinical Intramuscular and Intravenous Injections. T. Sollmann, Nora E. Schreiber and H. N. Cole, in collaboration with J. V. Ambler, J. A. Gammel, R. L. Howard and H. C. Shaw, Cleveland.—p. 1.

Mycostatic Studies on Certain Moniliae and Related Fungi. Paulina Gomez-Vega, Bogota, Colombia, South America.—p. 49.

Kaposi's Varicelliform Eruption: Report of Case. W. H. Goeckerman and L. F. X. Wilhelm, Los Angeles.—p. 59.

Epidemic of Ringworm Due to Epidermophyton Floccosum (Inguinale). S. T. Mercer, Seattle, and G. J. Farber, New York.—p. 62.

Effect of Roentgen Rays on Lipids of Epidermis. U. J. Wile, O. J. Cameron and H. C. Eckstein, Ann Arbor, Mich.—p. 69.

Essential Syphilitic Alopecia: Report of Case. L. Hollander, Pittsburgh.—p. 73.

Epithelioma Adenoides Cysticum with Features of Syringoma. A. E. Ingels, San Francisco.—p. 75.

Elephantiasis of Penis and Scrotum: Sequel of Lymphogranuloma Inguinale. G. V. Stryker and B. Ploch, St. Louis.—p. 86.

Pustular Psoriasis of Palms and Soles: Report of Four Cases. D. Bloom, New York.—p. 90.

Long Incubation Period of Warts. H. J. Templeton, Oakland, Calif.—p. 102.

Excretion of Mercury After Injections.—Sollmann and his collaborators studied the excretion of mercury after the injection of various mercuric compounds and compared the injection method with the oral and inunction methods. They found that the antisyphilitic efficiency of mercurial treatment appears to be conditioned by the continued maintenance of an adequate concentration of diffusible, dissociable mercury. The mercury that is fixed and stored in the tissues does not appear to have therapeutic significance. The urinary excretion of mercury serves as an indicator of the diffusible mercury. The fecal excretion is unimportant, qualitatively and quantitatively, except for injections of flumerin. The urinary curve for excretion ranges from periodic, with the injection of the diffusible organic compounds, to continuously cumulative, with methods employing the less soluble compounds that form absorption depots, including inunctions, oral administration and intramuscular injections of slowly soluble or precipitant compounds. All the effective antisyphilitic methods show the continuously cumulative type of excretion. In accordance with this the closest correlation exists between the antisyphilitic efficiency and the level for daily urinary excretion toward the end of the treatment (the end of the fourth week). All forms of treatment yielding levels below 0.5 mg. of mercury daily at the end of the fourth week are clinically ineffective. These include the inunctions with ointments of mild mercurous chloride and with weak (5 per cent) ointments of metallic mercury and mercury oleate, the oral administration of mercuric chloride in doses of 15 mg. daily, the intravenous injections of oxycyanide and the intramuscular injections of the benzoate in the usual dosage, intermittent intramuscular injections of red mercuric iodide, and intravenous injections of compounds with their mercury in firm organic combination—salyrgan, novasurol and mercurosal. These give very high temporary levels for excretion of mercury, but they sink to insignificant ones within a few hours. All methods of treatment that secure a daily urinary excretion of from 0.8 to 1 mg. of mercury at the end of the fourth week are effectively antisyphilitic and may cause stomatitis. The ordinary and the massive inunctions, the daily oral administration of 0.2 Gm. of mercury with chalk, the daily intramuscular injection of mercuric sodium bromide and the weekly intramuscular injection of mercuric oil come within this group. With the last preparation there is the constant danger of cumulative intermittent absorption and intoxication. The oral administration of yellow mercurous iodide and mercuric sodium bromide, 0.5 Gm. daily, and some of the methods of injection raise the level for the fourth week to 2 or 4.5 mg. of mercury daily. These higher levels probably act more rapidly against syphilis, but they are also more likely to produce severe stomatitis, which limits their continuance and reduces their efficiency. Considerable quantities of mercury are retained in the tissues indefinitely, even with the intravenous injections of diffusible organic compounds (from 31 to 77 per cent). These retentions are especially high with the colloidal solutions (from 96 to 99 per cent). Since the antisyphilitic action ceases promptly with the excretion, this retained mercury is therapeutically useless. It is undesirable, since it may be harmful to the tissues.

Archives of Neurology and Psychiatry, Chicago

34: 1-242 (July) 1935

Cutaneous Innervation: Experimental Study. L. H. Lanier, H. M. Carney and W. D. Wilson, Nashville, Tenn.—p. 1.

Cerebral Birth Conditions, with Especial Reference to Myelogeny. C. A. Patten and R. A. Matthews, Philadelphia.—p. 61.

*Cervicodorsal Sympathectomy in Multiple Sclerosis: Its Rationale and Report of Eight Cases. F. S. Wetherell, Syracuse, N. Y.—p. 99.

Effect of Intracranial Tumors on Sella Turcica: Analysis of Four Hundred and Forty-Six Cases of Verified Intracranial Tumor. K. Kornblum and L. H. Osmond, Philadelphia.—p. 111.

Relation of Hypothalamico-Hypophyseal System to Diabetes Insipidus. C. Fisher, W. R. Ingram and S. W. Ranson, Chicago.—p. 124.

Extensive Calcification in the Brain: Case. J. Kasanin and R. P. Crank, with technical assistance of Dorothy E. Noble and Annette C. Rivard, Howard, R. I.—p. 164.

Claude Bernard 1813-1878. J. N. Petersen and J. Saucier, Montreal.—p. 179.

Cervicodorsal Sympathectomy in Multiple Sclerosis.—Wetherell resorted to cervicodorsal sympathectomy as a measure of relief in eight cases of multiple sclerosis. The operation consists of removing the inferior cervical and the first thoracic ganglion by the posterior approach. The transverse process of the first thoracic vertebra and about 1 inch of the first rib are removed. The ganglions are picked up and the cords above and below are sectioned, as are all the rami, and the structures thus sectioned are removed. With the exception of the first case, bilateral sympathectomy was done in one stage. General anesthesia with nitrous oxide and ether was used. All patients had little postoperative discomfort and stood the procedure exceptionally well. An attempt is made to rationalize the procedure on a basis of betterment of cerebral circulation, which may relieve irritation and allow a more normal blood supply and more normal conduction of nerve impulses.

Canadian Public Health Journal, Toronto

26: 261-314 (June) 1935

Progress and Trends in Public Health in North America. H. S. Cumming, Washington, D. C.—p. 261.

Tuberculin, Johnin and Mallein Derived from Nonprotein Mediums. E. A. Watson, Hull, Que.—p. 268.

The Problem of Fish as Food. A. G. Huntsman, Toronto.—p. 275.

Epidermophytosis. W. J. McCormick, Toronto.—p. 281.

Colorado Medicine, Denver

32: 513-592 (July) 1935

Roentgenologic Studies of Stomach, with Especial Reference to Rugae. J. S. Bouslog, Denver.—p. 524.

Present Status of X-Ray Interpretation of Pulmonary Tuberculosis in Children. K. D. A. Allen, Denver.—p. 530.

*Simple Conception of Dementia Praecox. C. S. Bluemel, Denver.—p. 540.

Dementia Praecox.—Bluemel states that it is not inconceivable that emotional stress may produce a toxic state which in the case of a biologically deficient organism leads to degeneration of the brain cortex. Following such a line of reasoning, one would implicate the endocrines as a source of

intermediate disturbance. One would suspect the gonads for the reason that the psychosis commonly occurs in the reproductive period of life. The end result of dementia praecox can be identified as organic change in the brain cells. It is probable that damage to the brain cells, and especially the dendrites, accounts for the associational defect that characterizes the fully developed psychosis. Presumably there occurs a sort of physiologic short circuiting, which breaks the former associational pathways. It is logical to suppose that cellular dysfunction accounts also for the so-called somatic hallucinations. The toxic theory of dementia praecox explains not only the degeneration of the brain cells in the later stages of the disease but also the phenomenon of recovery without defect during the early stages of the psychosis. Apparently the toxic condition may abate in any stage of the disease. The resultant damage is proportionate to the duration and violence of the destructive process. With early arrest of dementia praecox there is absence of sequels, and the patient seems to have suffered nothing more critical than a transient toxic confusional psychosis. With delayed arrest there are inevitable sequels.

Journal of Clinical Investigation, New York

14: 373-504 (July) 1935

Pneumonia Due to Pneumococcus Type XIV (Cooper) and Its Treatment with Specific Antiserum. J. G. M. Bullowa, New York.—p. 373.

Minute Volume Output and Work of Heart in Hypothyroidism. M. D. Altschule and Marie C. Volk, Boston.—p. 385.

Immunity in Diabetes: II. Relative Importance of Nutritional State and Blood Sugar Level in Influencing Development of Agglutinin After Typhoid Vaccine. R. Richardson, Philadelphia.—p. 389.

Excretion of Inulin, Xylose and Urea by Normal and Phlorhizinized Man. J. A. Shannon and H. W. Smith, New York.—p. 393.

Renal Excretion of Creatinine in Man. J. A. Shannon, New York.—p. 403.

Electrolyte Balance in Acute Gout. J. H. Talbott, B. M. Jacobson and S. A. Oberg, Boston.—p. 411.

*Study of Leukocytosis Produced in Man by Artificial Fever. P. Cohen and S. L. Warren, Rochester, N. Y.—p. 423.

Urticarial Response to Light and Its Photophysiology. H. F. Blum, H. Allington and R. West, Berkeley, Calif.—p. 435.

Effect of Renal Denervation on Patients Suffering from Nephritis. I. H. Page and G. J. Heuer, New York.—p. 443.

Behavior of Haemophilus Influenzae in Certain Diseases of Children. R. W. Huntington Jr., New Haven, Conn.—p. 459.

Experimental Carditis: Changes in Myocardium and Pericardium of Rabbits Sensitized to Streptococci. B. M. Baker, Caroline Bedell Thomas and R. M. Penick Jr., Baltimore.—p. 465.

Rate of Absorption of Iodide and Glycine from Gastro-Intestinal Tract in Normal Persons and in Disease Conditions. C. W. Heath and H. W. Fullerton, Boston.—p. 475.

The Heart in Thyroid Disease: I. Effect of Thyroidectomy on Orthodiagram. A. Margolies, E. Rose and F. C. Wood, Philadelphia.—p. 483.

Id.: II. Effect of Thyroidectomy on Electrocardiogram. E. Rose, F. C. Wood and A. Margolies, Philadelphia.—p. 497.

Leukocytosis Produced by Artificial Fever.—To determine the changes occurring in the number of blood cells during artificial fever treatments, in which the patients' temperature was elevated and maintained at a constant level for a definite period by radiant energy, Cohen and Warren observed ten patients during a total of eleven treatments. There were seven treatments for gonococcic infection; one patient in this group was suffering also from latent syphilis and chronic infectious arthritis. The diagnoses in the remaining four cases were syphilis of the central nervous system, chronic infectious arthritis, brain tumor and carcinomatosis. All observations of temperature during treatment were made by means of a resistance thermometer placed in the rectum of the patient. In practically every case the red blood cell count, hemoglobin, white blood cell count and differential count, including the Schilling hemogram made from coverslip blood smears stained with Wright's stain, were determined before treatment and every hour, starting when the temperature had reached the desired height and was being maintained at a constant level. These determinations were continued for several hours after the termination of the fever. The blood studies were then followed at intervals until the patient was discharged from the hospital. The counts were made from blood taken from the ear. A leukocytosis was found in every case. The maximal change and the onset, duration and extent of this change, in relation to the period of fever, varied from patient to patient. A relative and absolute increase of polymorphonuclear leukocytes was observed during or immediately following the febrile period. There was a substantial relative and absolute increase in immature polymorphonuclear leukocytes in six of the eleven cases. There was a relative and absolute decrease in lymphocytes in all cases. There was a slight rise in the red blood cell count and hemoglobin during or immediately following the period of fever. Immature red blood cells were found in a single case, which also exhibited the greatest increase (20 per cent) in hemoglobin during a fever of 41.6 C. (106.9 F.) for twenty-one hours. These observations suggest a mobilization into the circulation of available and nearly mature cells of the myeloid and erythrocytic series as a result of the fever, while the cells of the lymphoid series decrease during this period.

Journal of Lab. and Clinical Medicine, St. Louis

20: 895-1000 (June) 1935

Observations on Autonomic Control of Cardiac Vasculature: Attempted Vagus and Sympathetic Overaction on Cat's Heart. H. F. Robertson and A. J. Derbyshire, Boston.—p. 895.

*Value of Takata and Ara Reaction as Diagnostic and Prognostic Aid in Cirrhosis of Liver. A. B. Ragins, Chicago.—p. 902.

Artificial Pneumothorax in Treatment of Lobar Pneumonia: Review of Forty Pneumothorax-Treated Patients and One Hundred Patients Treated by Other Methods. A. Behrend, Philadelphia; V. L. Tuck, Sherman, Texas, and W. E. Robertson, Philadelphia.—p. 914.

Phosphorus Metabolism: V. Relation Between Urinary Phosphate and Blood Phospholipids During Absorption of Fats. G. E. Youngburg, Buffalo.—p. 920.

*Complement Fixation Reactions in Carcinoma. H. W. Lundy, St. Louis.—p. 923.

Serum Calcium in Arthritis. E. F. Hartung and C. H. Greene, New York.—p. 929.

*Occlusion of Portal Vein: Experimental Study with Its Clinical Application. F. F. Boyce, R. Lampert and Elizabeth M. McFetridge, New Orleans.—p. 935.

Influence of Diet on Toxicity of Ethylhydrocupreine Hydrochloride: Preliminary Report. A. J. Nedzel, Chicago.—p. 944.

Fat Embolism: Control Study of Blood Serum and Urine. F. J. Jirka and C. S. Scuderi, Chicago.—p. 945.

Local Adrenalin Effect After Sympathectomy: I. Peripheral Vessels: Preliminary Report. A. M. Wright, J. H. Mulholland, K. Leora McCloskey and F. W. Co-Tui, New York.—p. 947.

Fungicidal Power of Phenol Derivatives: II. Strength in Presence of Proteins. G. J. Woodward, L. B. Kingery and R. J. Williams, Portland, Ore.—p. 950.

Preservation of Blood Films. T. K. Rathmell and H. W. Jones, Philadelphia.—p. 954.

Use of Razor Blades for Tissue Sectioning. I. A. Nelson, Tulsa, Okla.—p. 956.

Technic for Bile Fistula in Rat and Demonstration of Indispensability of Bile. L. Sawyer and S. Lepkovsky, Berkeley, Calif.—p. 958.

Use of Proteins for Embedding Small Tissues for Sectioning by Freezing Method. I. A. Nelson, Tulsa, Okla.—p. 964.

Suspension Damped for Low Frequency Vibrations. J. P. Baumberger and Stephanie Sigurdson, Stanford University, Calif.—p. 968.

New Rat Feeding Device. J. P. Baumberger and S. Allen, Stanford University, Calif.—p. 970.

Method for Determination of Creatine in Urine. W. D. Langley, M. M. Rosenbaum and M. G. Rosenbaum, Buffalo.—p. 972.

Altering the Vim-Scheftel Colorimeter for General Use. J. A. Schindler, Monroe, Wis.—p. 975.

Method of Sputum Digestion Preliminary to Culture for Tubercle Bacilli. W. L. McNamara and E. F. Ducey, West Los Angeles, Calif.—p. 976.

Mass Culture Apparatus for Securing Bacterial Cells for Analysis. R. A. Greene, Tucson, Ariz.—p. 977.

Vaseline Dispenser for Hanging Drop Preparations. R. A. Greene, Tucson, Ariz.—p. 978.

Special Camera for Routine Photomicrography. J. A. Reyniers, Notre Dame, Ind.—p. 979.

Electrodialysis Apparatus for Use with Alternating Current. E. J. Czarnetzky, San Francisco.—p. 981.

Determination of Urea in Blood by Folin Distillation Method: Note. Determination of Urea by Steam Distillation. F. H. L. Taylor and Margaret A. Adams, Boston.—p. 983.

Value of Takata and Ara Reaction in Cirrhosis of Liver.—Ragins employed the Takata-Ara reaction in 276 patients, using the Jezler modification. The clinical diagnosis was used as a basis for classification of the diseases and, whenever possible, was substantiated by postmortem examination or surgical biopsy. The cases were classified into fourteen main groups, with cirrhosis of the liver heading the list. That the test is of value in cases of decompensated liver conditions due to cirrhosis is without doubt. For latent liver damage the test is not entirely reliable. The Takata-Ara reaction is positive in 98 per cent of the cases of cirrhosis of the liver. The sim-

plicity with which the test is carried out warrants its use in hospital and office practice as both a diagnostic and prognostic aid in cases of cirrhosis of the liver. Liver impairment occurs in hyperthyroidism, as shown by the Takata-Ara reaction.

Complement Fixation Reactions in Carcinoma.—By fractionating according to Lehmann-Facius the alcoholic extract of cancer tissue, Lundy obtained positive complement fixation reactions in 70 per cent of fifty-one cases of carcinoma examined. Of twenty-eight carcinoma serums tested with the ethylene chloride antigen, 100 per cent were positive. With the cholesterinized phosphatid fraction of the alcoholic extract, all but two of 107 four-plus syphilitic serums reacted positively. With the ethylene chloride fraction of twenty-seven four-plus syphilitic serums tested, eleven were negative. Of ninety-two normal serums one gave positive reactions with the phosphatid fraction, while out of eleven such serums four were positive with the ethylene chloride fraction. The antigen concerned in fixation with cancer serums is not destroyed by heating it to 125 C. but is destroyed by certain alkaline reagents. The cancer antigen apparently is different from the syphilitic antigen, and it appears probable that these two antigens may be separated.

Occlusion of Portal Vein.—Boyce and his collaborators present experiments proving that: 1. Complete occlusion of the portal vein in one stage, as well as successive occlusion of both branches, is incompatible with life. 2. Occlusion of the main portal trunk in several stages is a feasible procedure if not more than two thirds of the vein is occluded at any one time. Experimental proof is advanced to disprove the theory that the loss of blood into the gastro-intestinal tract is the only cause or the chief cause of death in portal occlusion. The theory is advanced that death in portal occlusion is due (1) to an abrupt and immediate fall in blood pressure, brought about by a neurogenic factor with resulting reflex inhibition, as in primary shock, plus the abrupt diversion of a large amount of blood from the circulation, with a resulting decrease in blood volume, and (2) to the maintenance of the blood pressure at this critical level, as the result of a continued gradual withdrawal of blood from the circulation, with a continued gradual decrease in blood volume as the diverted blood is collected in an area from which it cannot escape, plus the stagnation of this blood in the gastro-intestinal tract, which has all the effect of primary hemorrhage. Occlusion of the portal vein for pylephlebitis of appendical origin is discussed in its clinical aspects, and it is concluded that the operation, although theoretically sound and technically possible, actually has a limited field and always is attended with grave risks.

Journal of Urology, Baltimore

34: 1-92 (July) 1935

*Hyperparathyroidism and Renal Disease: Note as to Formation of Calcium Casts in This Disease. F. Albright and Esther Bloomberg, Boston.—p. 1.
Treatment of Bladder Tumors with McCarthy Resectoscope. T. E. Gibson, San Francisco.—p. 8.
Bladder Dysfunction in Cases of Brain Tumor: Cystometric Study. J. W. Watts and C. A. W. Uhle, Philadelphia.—p. 10.
Preliminary Shrinkage of Prostate in Transurethral Resection, Together with Histologic Study of Action of Coagulating and Cutting Currents. C. K. Smith and A. L. Stockwell, Kansas City, Mo.—p. 31.
Spontaneous Rupture of Epididymitis and Two Unusual Accidents of Testicle: Report of Cases. E. S. Pomeroy, Salt Lake City.—p. 43.
Abscess of Testicle. W. Rosenberg, Cleveland.—p. 44.
*Gonadotropic Hormone in Urine of Men with Tumor of Testis. F. Hinman and T. O. Powell, San Francisco.—p. 55.
Prognosis and Treatment of Tumors of Testis. F. Hinman, San Francisco.—p. 72.
Myxosarcoma of Spermatic Cord. A. N. Collins and G. L. Berdez, Duluth, Minn.—p. 85.

Hyperparathyroidism and Renal Disease.—Albright and Bloomberg state that hyperparathyroidism is such a frequent cause of renal stone formation that its presence must be ruled in or out in every case of this disease. They studied a series of twenty-three proved cases of hyperparathyroidism. Of these, fifteen patients had renal calculi and three others renal lesions due to calcium deposits in the intrarenal urinary passageways. Eleven patients were suspected of having the disease only because of the renal calculi and had no bone disease. Only five patients had bone disease without renal disease. A frequent finding in hyperparathyroidism is the presence of many finely granular casts in the urinary sediment. The granules have been shown to contain calcium, probably calcium phosphate. The casts can be made to change into hyalin casts, as the urine is made more acid by administering ammonium chloride by mouth. Their continuous presence in large numbers is an indication that intrarenal damage is in progress. The factors governing the formation of these casts, which in a way are microscopic calculi in the renal tubules, are probably the same that govern stone formation in hyperparathyroidism. These factors are the concentrations in the urine of calcium, of phosphate and of hydrogen ions. Stone formation in hyperparathyroidism belongs to that etiologic group in which the presupposing abnormal factor is an excess of crystalloids in the urine.

Gonadotropic Hormone in Urine with Tumor of Testis.—Hinman and Powell state that the pituitary gland, pregnancy and embryonal tumors are known causes of the appearance in the urine of gonad-stimulating hormones. The stimulation of the growth of gonads and genitals of infantile animals varies with the origin of the hormone producing it, the amount present in the urine and the animal used for the injections. The authors make a qualitative test for as low as 250 units in infantile mice and rats first on fresh unaltered morning urine. If positive, a quantitative test may be made. The microscopic ripening of the graafian follicles is more easily read in mice than in rats. The gross enlargement of the uterine horns is more definite and diagnostic in mice than in rats. At the age of twenty or twenty-one days the ovary of the rat may show open follicles normally. The hydrocele fluid with tumor of the testis may contain more of the hormone than the patient's urine. The majority of tumors of the testis are embryonal. The urine of patients having embryonal tumors contains a substance that produces gross enlargement of the uterine horns or microscopic ripening of ovarian follicles (reaction I of Zondek) when injected into infantile female mice and rats. The presence of such a gonadotropic hormone in the urine of a patient with a tumor of the testis is evidence of testicular malignancy and its absence is evidence against malignancy. The effect of irradiation on the amount of hormone in the urine, as determined by quantitative methods before and after irradiation, gives a good indication of roentgen sensitivity and may be used as a therapeutic test in conjunction with the clinical effect on metastases, when present. The therapeutic test of irradiation must be interpreted in conjunction with the histologic structure of the tumor, the clinical absence of metastases or the character of metastases when present and the physical condition of the patient. The hormone test permits a more accurate prognosis and a better control of therapy than has been possible heretofore.

Michigan State M. Society Journal, Grand Rapids

34: 347-416 (June) 1935

Low Calory Ketogenic Diet for Treatment of Chronic Urinary Tract Infections. R. M. Nesbit, C. H. McDonnell and Genevieve C. Rourke, Ann Arbor.—p. 347.
*Diabetes Insipidus After Epidemic Encephalitis. L. E. Himler, Ann Arbor.—p. 350.
Major and Minor Medical Morals. L. F. Barker, Baltimore.—p. 352.
Aneurysm of Splenic Artery with Fatal Hemorrhage. G. L. Le Fevre and E. M. Pettis, Muskegon.—p. 358.
Physicians as Dramatists. G. S. Bates, Detroit.—p. 362.
The Rhinologic Management of Allergic Individual. J. E. Croushore and S. J. Levin, Detroit.—p. 369.
The Periodic Health Survey in Women. E. S. Hoffman, Detroit.—p. 374.
Ectopic Pregnancies: Review of Two Hundred and Eighteen Cases. D. M. Davidow, Detroit.—p. 376.
Hyperparathyroidism: Blood Phosphorus and Calcium Changes: Report of Three Cases. I. I. Bittker, Detroit.—p. 381.
Some Interesting and Unusual Lesions of Oral Mucous Membrane. A. R. Woodburne, Grand Rapids.—p. 384.
Sickle Cell Anemia: Etiology: Report of Case. H. A. Robinson, Detroit.—p. 388.

Diabetes Insipidus After Epidemic Encephalitis.—Himler discusses a case in which almost all the symptoms of the so-called neuropituitary syndrome were present: polydipsia, polyuria, obesity, elevated blood pressure, tendency to somnolence, headaches and mild emotional and psychic disturbances. The febrile illness which preceded the onset of the polydipsia

in infancy was undoubtedly an attack of epidemic encephalitis. The subsequent development of parkinsonism and oculogyric crises fourteen years later leaves little doubt that epidemic (lethargic) encephalitis was the sequel. Because of the close proximity of the globus pallidus and substantia nigra to the hypothalamus, it can be readily understood how an inflammatory process in the basal ganglions may by slight extension medially involve the region in which the diencephalic thirst center is located. Various types of medication were tried in an attempt to reduce both the parkinsonian tremor and the excessive desire for fluids. The usual drugs for parkinsonism failed to have an appreciable effect on the intake and output. Solution of pituitary intramuscularly four times a day, and pitressin nasal spray every six hours, were definitely the two most valuable agents in reducing the polydipsia and polyuria. When the intake was kept between 6,000 and 8,000 cc. daily, the patient also felt generally more comfortable. The possibility of a psychogenic element was excluded by substituting sterile hypodermics at the time solution of pituitary was being given, and there was a prompt rise of the intake to the original level within a day. The persistence of symptoms in the patient for nineteen years would indicate that they are in all probability permanent. In this respect the diabetes insipidus bears the same general prognosis as other sequels of epidemic encephalitis. In view of the organic nature of the underlying cause, it is doubtful whether any therapy for the abnormal thirst sensation can be more satisfactory than that for the parkinsonism. What beneficial effect is obtained seems to be due to intermediation of the pituitary. The exact physiologic relationship between the hypophysis and the hypothalamus, and the manner in which it is influenced by the administration of posterior lobe extracts, has not as yet been determined.

Military Surgeon, Washington, D. C.

77: 1-56 (July) 1935

Promotion and Experience. J. C. Pryor.—p. 1.
Economic Phases of Tropical Medicine, with Especial Reference to Malaria Control. R. C. Connor.—p. 4.
Food, Fads and Folly. F. J. Vokoun.—p. 19.
Gunshot Wounds Which Caused Deaths of Three of Our Presidents. J. W. Davis.—p. 23.
Advantages of Active Duty Training with Regular Army Units for Medical Reserve Officers. D. P. Penhallow.—p. 29.
Quinine and Malaria in the Army Ninety Years Ago. G. F. Lull. —p. 34.

New England Journal of Medicine, Boston

212: 1197-1242 (June 27) 1935

Management of Bright's Disease and Hypertension. J. P. O'Hare, Boston.—p. 1197.
Poradenolymphitis. L. A. Giffin, West Hartford, Conn.—p. 1209.
*Treatment of Acne Vulgaris with Pregnancy Urine Extract: Preliminary Report. C. H. Lawrence and J. Feigenbaum, Boston.—p. 1213.
Bromide Intoxication. T. S. Claiborne, Boston.—p. 1214.
Optic Disk as Aid to Diagnosis in Central Nerve Lesions. G. G. Marshall, Rutland, Vt.—p. 1220.

Treatment of Acne Vulgaris with Pregnancy Urine Extract.—Lawrence and Feigenbaum treated fifteen patients presenting acne vulgaris with an initial dose of 1 cc. of anterior pituitary-like principle (100 rat units) to determine the individual reaction to the extract. The dose was then increased to 2 cc. three times weekly. In only one patient was there enough reaction to make it inadvisable to give the larger dose. The treatment was interrupted three or four days before each menstrual period and resumed from two to four days after menstruation ceased. In no case was there any demonstrable effect on normal menstruation. In patients who had acne and menorrhagia or metrorrhagia, the improvement in the acne paralleled the return of menstruation to normal. This association of effects suggests that, in these patients, the acne and the menstrual disturbance were due to an identical hormone imbalance. Of the authors' patients eight have been cured, while four are greatly improved and two show slight improvement. No definite conclusions can be drawn from so small a series of observations, but these observations and the natural history of acne suggest that its cause lies in an endocrine imbalance coincident with adolescence, consisting possibly in a quantitative or qualitative abnormality of the newly activated gonadal hormones.

Puerto Rico J. Pub. Health & Trop. Med., San Juan

10: 417-548 (June) 1935

Modern Measures in Mass Control of Tuberculosis. E. R. Long, Philadelphia.—p. 417.
Tuberculosis Surveys in Puerto Rico: I. Study of a Coast and a Mountain Municipality. J. Rodríguez Pastor, P. Morales Otero and G. C. Payne, San Juan.—p. 451.
Id.: II. Study of Two Urban Communities: Preliminary Report. J. Rodríguez Pastor, P. Morales Otero, G. C. Payne, R. Ramírez Santos and E. Silva, San Juan.—p. 514.
Id.: III. Survey of Slums in San Juan. J. Arruza, G. C. Payne and J. Rodríguez Pastor, San Juan.—p. 533.
*Chromoblastomycosis: Preliminary Report on New Clinical Type of Disease Caused by Hormodendrum Compactum, Nov. Sp. A. L. Carrión, San Juan.—p. 543.

Chromoblastomycosis.—Carrión reports a case of chromoblastomycosis in which the infection started more than twenty years ago on the left wrist. The disease has followed a slow and chronic course, gradually but steadily spreading, until now it covers most of the hand, forearm and elbow. It does not show either the nodules or the large, prominent, vegetative tumors usually present in this mycosis, and the lesions are more patchy, psoriasiform, less infiltrated and, in places, more or less papillomatous. The invasion of new regions seems to have taken place chiefly by peripheral extension of old foci. The occurrence of extensive zones of scarred skin indicates that healing has eventually taken place in the older portions of the pathologic areas. The histopathologic changes are indistinguishable from those observed in other cases of chromoblastomycosis. The fungus isolated from the lesions is a hormodendrum, which resembles in some respects Hormodendrum pedrosoi but which shows a considerable number of clean-cut differences clearly separating it from that species. Cultures on Sabouraud's medium are characteristic. The rate of growth is much slower, the gross morphology is markedly different and the consistency is much more brittle than in Hormodendrum pedrosoi. Microscopically the thallus as a whole is darker and the hyphae are coarser and more tortuous. The spore heads are more compact, owing to the sphericity of the conidia, the relatively large diameter of the cross septums which separate them and the frequency with which a spore gives rise to two or more secondary conidia. Finally, the size, shape and mode of articulation of the individual spores are entirely different from Hormodendrum pedrosoi. Because of the compact arrangement of the spores the name Hormodendrum compactum is proposed to designate this species.

Radiology, Syracuse, N. Y.

24: 651-780 (June) 1935

Rhizomonomelorheostosis. B. P. Widmann and W. R. Stecher, Philadelphia.—p. 651.
Some Phases of Roentgenologic Diagnosis of Gastric Cancer. B. R. Kirklin, Rochester, Minn.—p. 672.
Debt of Surgery to Roentgenology. D. C. Balfour, Rochester, Minn. —p. 684.
*Inflammation of Descending Portion of Duodenum: Preliminary Report. M. L. Sussman, New York.—p. 691.
Treatment of Epithelioma Involving Cartilage Using 220 Kilovolt Peak and Heavy Filtration. E. A. Merritt and R. R. Rathbone, Washington, D. C.—p. 701.
Osteogenic Sarcoma: Roentgenologic Characteristics. R. T. Wilson, Temple, Texas.—p. 708.
Bone Lesions in Children. J. I. Mitchell, Memphis, Tenn.—p. 715.
Osteogenic Sarcoma: Its Pathologic Characteristics. C. Phillips, Temple, Texas.—p. 728.
*Modification of Radiation Treatment of Carcinoma of Stomach. I. I. Kaplan, New York.—p. 735.
Preliminary or Preoperative and Preradium Irradiation in Management of Malignant Diseases. J. T. Stevens, New York and Montclair, N. J.—p. 739.
*Simplified Method of Bronchography. J. Forestier and L. Leroux, Paris, France.—p. 743.

Inflammation of Descending Portion of the Duodenum.—Sussman states that duodenal inflammatory lesions occur distal to the duodenal bulb and particularly in the portion between the knee and the papilla major. He studied eight cases in which the diagnosis of inflammatory lesion of the descending portion of the duodenum was made roentgenologically. Operations were performed in two, but the information obtained was not satisfactory and the conclusions arrived at must be evaluated accordingly. The cases could be grouped roentgenologically as stenosis and irritability of the descending portion alone, stenosis with the demonstration of an ulcer crater within the

stenotic lesion, stenotic lesion in association with ulcer of the duodenal bulb, and stenotic lesion in association with gastric ulcer. Noteworthy features were relatively slight to marked narrowing of the lumen of the duodenum between the upper knee and the papilla major, marked irritability, irregularity in outline or unusual smoothness, and a marked disturbance in the longitudinal mucosal folds so that they either disappeared or were irregular in their distribution as demonstrated by compression technic. In some cases an ulcer crater was seen. There was no organic obstruction. There may be an associated peptic ulcer. The clinical symptoms of peptic ulcer are obtained but are exaggerated; often there is stress on nocturnal pain, nausea and vomiting in attacks and poor response to a Sippy regimen. Hyperacidity is a fairly prominent feature. An appeal for careful study of the descending portion of the duodenum is made, particularly in routine cases, to determine the normal, and in cases in which there is a suggestive history of ulcer and a lesion is not demonstrated in the stomach or duodenal bulb. The diagnosis of inflammatory disease of the descending portion of the duodenum rather than essential periduodenitis appears to be the more satisfactory in these cases.

Modification of Radiation Treatment of Carcinoma of Stomach.—Kaplan used the following technic in three patients who had carcinoma of the stomach. It consists in a preliminary gastro-enterostomy, followed by the delivery of the stomach into the abdominal wound, localization of the lesion and implantation of suitably prepared, filtered radon seeds. The number of seeds and the strength of the radon in each varies with the extent of the lesion. From twenty to forty gold seeds were used, containing approximately 1 millicurie of radon in each seed. The seeds were implanted in the part of the stomach wall involved by the tumor and were placed in parallel lines up to, but not puncturing through, the mucosa of the stomach. Seeds were also placed in all palpable accessible lymph nodes in the vicinity of the stomach. The gold filtration of 0.3 mm. absorbs approximately 95 per cent of the beta rays, thereby to a large extent avoiding localized necrosis. Following the radon implantation, the abdominal wound is closed. The next day the patient may be put on a nourishing soft diet and in a short time allowed up and about. A few days following the healing of the abdominal wound, high voltage x-rays are directed to the stomach lesion, anteriorly and posteriorly through the abdominal wall. In this way additional radiation over a more extensive area is delivered to the tumor and surrounding tissues. In carcinoma of the stomach, the pylorus is the most frequent site of the lesion. Of the three cases presented, two were pyloric tumors and the third involved nearly the entire stomach, presenting the so-called leather bottle type. The result was good in two cases and bad in the third. The two patients were alive and comfortable, one after five months and one after two years. The third patient, with the leather bottle type stomach, died two months after treatment, having been bedridden continuously following treatment.

Simplified Method of Bronchography.—Forestier and Leroux describe a modification of the method proposed by Hicquet and Hennebert, which consists in injecting the oil into the bronchial tree with a soft rubber catheter introduced into the nostril and farther down into the pharynx, larynx, and trachea. The authors found that the same route could be followed without the use of any catheter, the oil, and, previously to it, the anesthetic, being injected directly into one nostril with an ordinary glass syringe exclusive of any tip or catheter of any sort. The method is based on the following principles: When the tongue is pulled out of the mouth and grasped firmly, the epiglottis is raised with the whole larynx, the upper orifice of the esophagus is closed and the patient is unable to swallow. If any fluid comes into the pharynx in this position, the only way open below is the glottis. The local anesthesia of the pharynx, larynx and trachea is made with exactly the same technic as the injection of iodized oil itself. The anesthetic solution is poured into the nostril and slides down to the glottis and later into the trachea, following exactly the same path which the oil will follow when bronchography is performed. No laryngeal mirror, swab or spray is necessary, and the technic may be performed by any qualified physician. The local anesthesia brought about by the cocaine solution on the nasal and pharyngeal mucous membranes probably helps to stop the cough reflex arising in the laryngeal vestibule. Once the anesthesia of the larynx has been obtained, the tracheal bifurcation is anesthetized by injecting some more anesthetic into the bronchial tubes. The results of the method have been most satisfactory. Only one person out of several hundred is able to swallow the oil while the tongue is pulled out firmly. This procedure causes the patient as little discomfort as possible. Fluoroscopy can be performed while the injection of iodized oil is made. In the event of failure, the use of a catheter passed through the nose may lead to success in a limited number of cases. In hospital work from four to five patients may easily be examined almost at the same time, the anesthesia being begun for each of them one minute after the other, and the whole set of cases can be examined within less than half an hour. The authors found the method without danger. A limited number of patients have experienced some dyspnea during the time of the injection. A subcutaneous injection of camphorin oil with ether can control this symptom very easily. In case of active sinus or nasal infection, the pernasal route should be avoided.

Southern Medical Journal, Birmingham, Ala.

28: 583-678 (July) 1935

Report on Application of Smith-Petersen Nail in Fresh Fractures of Femoral Neck by Adaption of Simplified Technic. W. B. Carrell, Dallas, Texas.—p. 583.
True Prostatic Calculi. H. W. McKay and G. A. Hawes, Charlotte, N. C.—p. 588.
Adenofibroma (Fibro-Adenoma) Malignum of Breast. M. D. Lindsay and H. C. Schmeisser, Memphis, Tenn.—p. 594.
Variations in Origin and Course in Hepatic Artery: Importance from Surgical Point of View. E. Z. Browne, New Orleans.—p. 599.
*Neuropathology of Pellagra in Its Relation to Cutaneous and Other Manifestations: Preliminary Report. B. R. Tucker, Richmond, Va.—p. 603.
Hereditary Ectodermal Dysplasia of Anhidrotic Type: Report of Two Cases. E. G. Schwarz, Fort Worth, Texas.—p. 606.
Sea Sponge Dressing to Promote Healing and Arm Function Following Radical Breast Amputation. M. J. Rumold and T. G. Orr, Kansas City, Kan.—p. 609.
Ringworm of the Scalp: Treatment of Microsporon Infections with Specific Culture Filtrate. L. M. Smith, El Paso, Texas.—p. 610.
Cancer of Face and Oral Cavity: Surgery versus Radiation. A. O. Singleton, Galveston, Texas.—p. 615.
Roentgen Therapy in Mammary Cancer. R. G. Giles, Temple, Texas.—p. 620.
Management of Atrophic Arthritis. W. P. Holbrook and D. F. Hill, Tucson, Ariz.—p. 625.
Influence of Early Therapy on Incubation Period of Syphilis. T. B. Hall, Kansas City, Mo.—p. 631.
Dengue Fever: Report of One Hundred Cases Studied at Jackson Memorial Hospital During the Miami Epidemic, 1934. J. M. McClamroch and J. R. Vallotton, Miami, Fla.—p. 635.
Rational Treatment of Nasal Diseases. D. Roy, Atlanta, Ga.—p. 638.
Trachoma Infection and Treatment. M. M. Cullom, Nashville, Tenn.—p. 642.
Incomplete Abortion and Miscarriage: Analysis of Five Hundred and Twenty-One Cases. T. M. Boulware, Birmingham, Ala.—p. 645.
Hernia in Railroad Employees. C. C. Green, Houston, Texas.—p. 649.
Mechanisms of Corpus Striatum and Cerebellum in Muscular Action: Mechanism of Voluntary Muscular Action. J. Greenwood, Houston, Texas.—p. 653.
*Newer Aspects of So-Called Ptomaine Poisoning. J. L. Goforth, Dallas, Texas.—p. 659.
Allergic Dermatitis. C. M. Stroud, St. Louis.—p. 665.
Some Important Factors in Prevention of Tuberculosis. S. E. Thompson, Kerrville, Texas.—p. 669.

Neuropathology of Pellagra.—Tucker attempts to correlate the alimentary and cutaneous lesions with the pathologic lesions found in the nervous system, discusses the latter and suggests a virus invasion as the possible etiologic factor in pellagra. The sequence of the symptoms of pellagra was first those of the alimentary canal, then of the cutaneous surfaces, nervous and mental manifestations usually coming later. In the alimentary canal the parts chiefly affected by pellagra are the mouth and the colon. The cutaneous lesions are bilateral and symmetrical and occur chiefly on the dorsum of the hands and the extensor surface of the arms, on the outer surface of the elbows, on the dorsum of the feet and the front of the knees, on the forehead, ala nasae, cheeks and chin, and less frequently on the front and back of the neck and on the labia or scrotum. Hence these lesions occur on either exposed or unexposed surfaces. Among the organic neurologic symptoms are tremors, muscular cramps, transient contraction of the limbs, mumbling speech, diminished hearing, diminished smell and diminished

taste, and the Romberg sign may be present. The most constant finding in six spinal cords and in two sympathetic spinal ganglions was gliosis. In the cords the posterior columns were especially involved. Other changes in both cords and ganglions were scattered chromatolysis, shrinkage of nerve cells, pigmentation, neurophagia and lysis or fragmentation of Nissl granules. Allowing for possible postmortem changes, it would seem that these alterations occur more markedly in pellagra than in most other diseases, although they cannot be considered specific for pellagra. All forms of degeneration were possibly more marked in the cervical and lumbar regions of the cords. The degenerations of the spinal sympathetic ganglions were extensive. The disease in its wide epidemiology, in its place occurrence, in its trophic lesions corresponding to root endings, in its cord and spinal sympathetic ganglionic invasion, in its apparent attenuation and in its recurrence reminds one of such filtrable virus diseases as influenza, encephalitis and infantile paralysis. The author believes that, if many more sections of the cord from the upper cervical region to the conus, of the sympathetic ganglions and of both motor and sensory peripheral nerves and sympathetic nerves are studied, pellagra will eventually be classified as a neurologic rather than a general medical disease and that it will be found that the distribution of the cutaneous and alimentary symptoms will be in relation to the lesions of the nervous system.

So-Called Ptomaine Poisoning.—Goforth says there is no justification for the continued use of the expression ptomaine poisoning. Food infection, the invasion and growth in the body of pathogenic micro-organisms capable of producing toxins, and food intoxication, a poisoning produced by toxins formed by bacteria in food before ingestion, constitute the largest and most important varieties of acute food poisoning. The organisms of the Salmonella group, particularly Bacillus aertrycke, enteritidis and suipestifer, are responsible for the majority of outbreaks of acute food poisoning. These organisms are capable of forming a heat-resistant irritant, which can produce acute gastro-enteritis. The sources from which the organisms causing bacterial food poisoning are derived are not completely known. Protein foodstuffs, particularly meat and milk products, are the vehicles of infection in the majority of instances. Laboratory methods are necessary in proving the diagnosis and etiologic factors of food poisoning. They should be more frequently employed when the physician makes his initial detailed study of the case. Accurate conclusions presuppose the support of pertinent clinical data. The increasing number of medicolegal cases of food poisoning emphasizes the necessity for the early, complete and accurate collection of data and materials for examination in each case by all associated with the case. The prevention of bacterial food poisoning depends to a large extent on the coordinated activities of the laboratory workers, the public health officer, the veterinarian, the nurse and the general practitioner. Rigid standards of sanitation regarding the preparation, preservation, handling and exposure of foodstuffs should be maintained. Extended research is needed to bridge the gaps in our knowledge of bacterial food poisoning.

Southwestern Medicine, Phoenix, Ariz.

19: 183-222 (June) 1935

*Bronchomoniliasis: Preliminary Report. J. W. Flinn, R. S. Flinn and Z. M. Flinn, Prescott, Ariz.—p. 183.
Physiologic Approach to Treatment of Heart Failure. F. A. Willius, Rochester, Minn.—p. 188.
Polycystic Kidney: Report of Five Cases. J. W. Pennington and D. M. Davis, Phoenix, Ariz.—p. 194.
*Presacral Ganglionectomy for Dysmenorrhea. A. K. Duncan, Douglas, Ariz.—p. 198.
Prehistoric Syphilitic Lesions: Example from North America. H. S. Denninger, Glendale, Ariz.—p. 202.
Calcium in Therapeutics. E. C. Houle, Nogales, Ariz.—p. 204.
Artificial Pneumothorax in Treatment of Pneumonia. J. C. Riggins, Tucson, Ariz.—p. 207.

Bronchomoniliasis.—In two cases of nontuberculous disease of the lungs, the Flinns isolated bronchomoniliasis and proved its pathogenicity by injection into the lungs of laboratory animals. In one case the diagnosis was confirmed by therapeutic test; in the other the diagnosis was proved by postmortem study and recovery of the organism from necropsy specimens. Morphologically the infecting organism was a yeast-like fungus belonging to the family Oosporaceae Saccardo. Biochemical studies enabled them to classify it definitely in the genus Monilia (or more accurately Monilia Persoon) and the species Monilia Pinoyi.

Presacral Ganglionectomy for Dysmenorrhea.—Duncan states that surgery of the pelvic sympathetic nerves for intractable dysmenorrhea has proved to be a safe and satisfactory method for the immediate and lasting relief of this periodically disabling condition. The operation can be performed by any competent abdominal surgeon and obviates the unsatisfactory temporizing methods of treatment in intractable dysmenorrhea, or unnecessary hysterectomy or the use of radium or x-rays, which are distinctly contraindicated in the young as a cure for this condition. The resection of the superior hypogastric plexus is safe and is not followed by any serious complications, and it in no way interferes with conception, gestation or delivery. The procedure is indicated in severe disabling pain at the menstrual period, which has existed over a period of time, often associated with pain of a neuralgic type in the pelvis and back between periods. If no adequate explanation for this pain can be found on physical examination, and it has resisted all the usual methods of treatment, a good indication for a sympathetic resection exists if one wishes to give permanent relief. It is not indicated when, at exploration, definite pathologic conditions are encountered that adequately account for the pain. Careful examination will show a high proportion of these cases showing a sclerotic change in the ovaries and these ovaries should not be removed as their function seems to become more normal after the sympathetic resection, and anatomic improvement may also take place. Cysts of the ovaries should be resected, the ovarian structure being disturbed as little as possible.

Texas State Journal of Medicine, Fort Worth

31: 67-184 (June) 1935

Memorial Address. C. A. Gray, Bonham.—p. 73.
Can Our Present System of Medicine Survive. S. E. Thompson, Kerrville.—p. 74.
Relation of Auxiliary to the Medical Profession. Mrs. S. D. Whitten, Greenville.—p. 78.

United States Naval Med. Bulletin, Washington, D. C.

33: 313-420 (July) 1935

Amebiasis and Its Surgical Complications. J. J. A. McMullin.—p. 313.
Amebiasis. H. M. Weber.—p. 324.
Suggested Change in Calculating Decompression Tables for Diving. J. A. Hawkins, C. W. Shilling and R. A. Hansen.—p. 327.
Promotion and Experience. J. C. Pryor.—p. 338.
Treatment of Vesical and Vascular Conditions by Operations on Sympathetic Nervous System. W. M. Craig.—p. 341.
Tumors and Associated Problems. F. K. Soukup.—p. 348.
Chorio-Epithelioma: Should Serum from Female in Puerperium and Pregnancy Be Given Therapeutic Trial? J. G. Dickson.—p. 358.
Double Oral Administration of Dye for Cholecystography. I. W. Jacobs.—p. 362.
Methylene Blue and Other Agents as Antidotes in Hydrocyanic Acid and Carbon Monoxide Poisoning. G. F. Cooper.—p. 364.
Oral Prophylaxis. E. B. Howell.—p. 370.
Psychology of the Sick. B. W. Hogan.—p. 373.
Surgical Treatment of Retinal Detachment. G. C. Wilson.—p. 379.
Prophylactic Use of Arsenicals in Syphilis. J. W. Kimbrough.—p. 386.
Arteriovenous Aneurysm of Internal Carotid Artery and Cavernous Sinus: Report of Case. J. F. Riordan and O. R. Nees.—p. 388.
Instance of Circulatory Collapse Attributed to Dinitrophenol. R. J. Leutsker.—p. 394.

Virginia Medical Monthly, Richmond

62: 185-242 (July) 1935

Urinary Obstructions in Children. L. Davis, Roanoke.—p. 186.
Urethral Obstructions in Children. W. W. S. Butler Jr., Roanoke.—p. 188.
Some Extra-Uterine Complications of Pregnancy. H. H. Ware Jr., Richmond.—p. 190.
Community and Medical Economics. R. W. Garnett, Danville.—p. 196.
Medicolegal Aspects of Apoplexy. J. M. Hutcheson, Richmond.—p. 198.
Administration and Misadministration of Digitalis. W. P. Adams, Norfolk.—p. 202.
Splicing Cast to Correct Angulation and Lengthen Leg. M. A. Johnson Jr., Roanoke.—p. 207.
Myocardosis: Problem of Preventive Medicine. L. S. Liggan, Irvington.—p. 208.
Effect of Salyrgan (Mersalyl) on Electrocardiogram. N. Bloom and Grace Cashon, Richmond.—p. 216.
Preventive Pediatrics. W. F. Burdick, Washington, D. C.—p. 218.
End Results of Dental Focal Infection from Medical Point of View. W. H. Higgins, Richmond.—p. 220.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Children's Diseases, London

32: 83-162 (April-June) 1935

Neurologic Complications of Varicella: Clinical and Epidemiologic Study. E. A. Underwood.—p. 83.
Analysis of Over Four Thousand Cases of Educational Deafness Studied During Past Twenty-Five Years. M. Yearsley.—p. 107.
Cancrum Oris in Ancient Rome. W. J. Rutherfurd.—p. 129.

British Journal of Experimental Pathology, London

16: 201-348 (June) 1935

Spectroscopic Investigation of Bacterial Toxins: Absorption Spectrums of Products of Corynebacterium Diphtheriae. A. Wadsworth, M. O. Crowe and L. A. Smith.—p. 201.
Experiments on Serologic Reactions of Potato Virus X. E. T. C. Spooner and F. C. Bawden.—p. 218.
Hemolysin from Strain of Animal Streptococci. H. Loewenthal and M. G. Pradhan.—p. 230.
Bacillus Resembling Erysipelothrix Muriseptica Isolated from Necrotic Lesions in Livers of Mice. S. E. B. Balfour-Jones.—p. 236.
Studies in Mouse Leukemia: Preleukemic Changes in Lymphoid Metabolism. J. Victor and J. S. Potter.—p. 243.
Id.: Metabolic Observations in Spontaneous Lymphatic Leukemia. J. Victor and J. S. Potter.—p. 253.
*Hypertension Associated with Experimental Oxalate Nephritis. W. M. Arnott and R. J. Kellar.—p. 265.
Propagation of Strain of Rabbit Fibroma Virus in Tissue Culture. G. H. Faulkner and C. H. Andrewes.—p. 271.
*Influenza: Preparation of Immune Serums in Horses. P. P. Laidlaw, W. Smith, C. H. Andrewes and G. W. Dunkin.—p. 275.
*Id.: Experiments on Immunization of Ferrets and Mice. W. Smith, C. H. Andrewes and P. P. Laidlaw.—p. 291.
Relation of Bile to Absorption of Vitamin D. N. B. Taylor, C. B. Weld and J. F. Sykes.—p. 302.
Tryptophan and "Sporogenes Vitamin" Requirements of Bacillus Botulinus. P. Fildes.—p. 309.
Essential Growth Factor for Staphylococcus Aureus. B. C. J. G. Knight.—p. 315.
Amino Acids Necessary for Growth of Clostridium Sporogenes. P. Fildes and G. M. Richardson.—p. 326.
Carbon Dioxide as an Essential Factor in Growth of Bacteria. G. P. Gladstone, P. Fildes and G. M. Richardson.—p. 335.

Hypertension Associated with Experimental Oxalate Nephritis.—In their search for a nephrotoxic substance that might produce hypertension, Arnott and Kellar used sodium oxalate. Fourteen chinchilla rabbits were used throughout the course of the experiments. Eight of these were placed on a relatively dry diet of oats and bran, with an occasional cabbage leaf and no water. The other six received a cabbage diet with water as desired. One animal in each group served as a control. After a prolonged period of control lasting several weeks, the animals were given a course of sodium oxalate intravenously, the injection being repeated every second day. The initial dose was from 50 to 60 mg. of sodium oxalate, which was raised after two injections to from 80 to 100 mg., depending on the weight of the animal. The control animals received equivalent volumes of physiologic solution of sodium chloride intravenously, to eliminate the possibility that the mere bulk of fluid had any effect on the blood pressure. Blood urea nitrogen readings were made on all animals during the control period and on the animals that survived a period of three weeks of the oxalate injections. The average normal systolic pressure in the fourteen rabbits was 96 mm. of mercury. It was found that repeated injection of sodium oxalate into rabbits results in a definite hypertension with a duration of approximately twelve days. Thereafter the pressure shows a pronounced instability, although it never reaches such a height as during the initial period of hypertension. This hypertension appears sooner and is more pronounced in the case of animals fed on a dry diet. It is hardly surprising that there is to be found a difference in the reaction of animals on such diets, as the conditions of renal function are so widely dissimilar. Those on a dry diet produce scanty concentrated urine rarely in excess of 50 cc. daily, with occasional periods of anuria as long as thirty-six hours, whereas those on the wet diet pass as much as 500 cc. of urine and rarely less than 150 cc. Whether or not this hypertension is of renal origin, the albuminuria, the nitrogen retention and the histologic picture indicate that at least it is associated with renal damage. The authors are unable at present to advance any evidence as to the mechanism by which the pressure is elevated, although they might suggest that it is in some way associated with glomerular ischemia resulting from the pressure exerted by the swollen tubular epithelium. The one common factor that is shared by most varieties of human renal disease associated with hypertension is some interference with glomerular circulation. It has to be realized, however, that, owing to the widely dissimilar etiology and histology, experimental oxalate nephritis sheds little light on human glomerular nephritis. They hope that this experimental production of hypertension may provide a basis for the investigation of the as yet unsolved relationship between renal damage and hypertension.

Influenza and the Preparation of Immune Serums in Horses.—Laidlaw and his associates found that antiinfluenzal serum of significant potency can be made by hyperimmunizing horses with virus emulsions from ferrets suffering from acute attacks caused by human or porcine strains of influenza virus. Such hyperimmune serum will neutralize influenza virus in mixtures even after considerable dilution. This serum confers some degree of passive immunity to mice on injection. It has a beneficial action on mice already infected with the virus. Horse hyperimmune serum can be fractionated and concentrated. The greater part of the activity is found in the pseudoglobulin fraction of the serum and is precipitated in the fraction salted out between 12 and 16 per cent of sodium sulphate. The resolution of influenzal pneumonia in mice is a slow process and presents some peculiar features.

Influenza and Experiments on Immunization of Ferrets and Mice.—Smith and his co-workers observed that ferrets after recovery from infection with influenza virus are completely resistant to reinfection for at least three months; thereafter the immunity slowly wanes. Ferrets with waning immunity still have significant amounts of virus-neutralizing antibodies, but in spite of the presence of these the nasal mucosa is susceptible to attack by virus. The waning immunity can be reinforced by subcutaneous inoculations of living virus so that once more the ferret becomes completely resistant. Subcutaneous inoculations of living or formolized virus produce in ferrets a partial immunity, characterized by the development of virus-neutralizing antibodies in the circulation and by an increased resistance of the lungs against virus attack. Similar immunization of mice with living virus has also a beneficial effect on the extent and course of the disease. The swine strain of virus (Shope, 1931) is immunologically related to but not identical with the two human strains studied.

British Journal of Physical Medicine, London

10: 23-40 (June) 1935

Physical Medicine and Flying. T. S. Rippon.—p. 25.
Place of Sun Bathing, Sea Bathing and Open Air Exercise in Growth and Development. K. R. C. Hallowes.—p. 27.
Function of Pigment in Skin. R. Aitken.—p. 30.
Feeding in Adolescence. Mary E. Ormsby.—p. 32.
Treatment of Certain Diseases by Chromotherapy. N. Scott.—p. 34.

British Medical Journal, London

1: 1251-1302 (June 22) 1935

*Treatment of Obstetric Disproportion. R. C. Brown.—p. 1251.
Survey of Physical Condition of Children Between Ages of Three and Five Years in Cardiff and Rhondda Schools, with Especial Reference to Factor of Malnutrition. A. G. Watkins.—p. 1256.
Recent Advances in Trachoma. F. H. Stewart.—p. 1261.
Five Hundred Foreign Bodies in Stomach. R. S. Kennedy.—p. 1262.
Pneumoconiosis in South Wales Colliery Surface Workers. A. Harper.—p. 1264.
Thyrotoxic Heart Disease. G. Bourne.—p. 1277.

Treatment of Obstetric Disproportion.—Brown states that the recognition of gross disproportion can be made on the findings of gross contraction of the pelvis alone. It is therefore essential that every patient be subjected to a vaginal examination and that the diagonal conjugate be measured. The outcome of labor in cases in which minor disproportion is thought to be present is uncertain. A decision can be made only after labor is in progress. Pelvic measurements are not unimportant but must be considered in conjunction with all other factors before prognosis can be made. A vaginal examination should be made in every case during pregnancy. Induction of premature labor for disproportion has no place in the delivery of a primipara. Induction of premature labor is a useful method in the delivery of a multipara when a record of the history

of former labor has been carefully kept and can be used as a guide to the capacity of the patient to deliver herself. A trial of labor will estimate the patient's capacity for delivery, and no amount of skill can enable an observer to decide on this capacity during pregnancy. When induction of premature labor is practiced in the case of the primipara it may be done unnecessarily, and there is little to prevent the obstetrician from repeating this error in the treatment of future pregnancies.

East African Medical Journal, Nairobi

12: 67-98 (June) 1935

Review of Incidence of Amebiasis in Zomba, with Especial Reference to European Cases. T. A. Austin and L. C. Mayne.—p. 68.
Bradycardia in a Muganda: Case. R. Y. Stones.—p. 89.

Journal of Physiology, London

84: 223-366 (June 18) 1935

Method of Directly Recording Changes in Caliber of Bronchi. M. P. Ellis and A. E. Livingston.—p. 223.
Part Played by Splanchnic Innervation in Emptying Time of Stomach. S. Cerqua.—p. 232.
Slow Impulses from Cutaneous Nerves of Frog. B. M. Hogg.—p. 250.
Acetylcholine Equivalent of Nervous Tissues. G. S. Barsoum.—p. 259.
Course of Cardiac Nerve Fibers in Pulmonary Plexuses. D. T. Barry.—p. 263.
Effect of Vitamin D on Calcium Content of Dentine. E. W. Fish.—p. 272.
*Some Immediate Physiologic Effects of Reduced Cooling Powers on Human Subjects. D. H. K. Lee and A. G. Mulder.—p. 279.
Response of Uterus of Hypophysectomized Rabbits to Extracts of Corpus Luteum. J. M. Robson.—p. 296.
Relation of Spleen to Formation of Glycogen in Liver: Note on Rate of Absorption of Glucose and Lactic Acid. Margaret Kerly and C. Reid.—p. 302.
Intravenous Injection of Oxygen with Animal Under Ordinary and Increased Atmospheric Pressure. I. Singh.—p. 315.
Afferent Fibers from Abdomen in Splanchnic Nerves. W. A. Bain, J. T. Irving and B. A. McSwiney.—p. 323.
Studies in Exophthalmos: Effect of Certain Sympathomimetic Substances on Eye of Cat and Dog. C. E. Brunton.—p. 334.
Undulatory Changes, of Uterine Origin, in Arterial Blood Pressure. K. J. Franklin.—p. 342.
Adrenalin Vasodilatation in Voluntary Muscle. G. A. Clark.—p. 344.
Oxytocic Properties of Blood Extracts and Their Physiologic Significance. G. H. Bell and J. M. Robson.—p. 351.
Hypoglycemic Action of Insulin-Phosphotungstate and Phosphotungstic Acid Administered by Mouth. H. N. Mukherjee.—p. 362.

Physiologic Effects of Reduced Cooling Powers.—Lee and Mulder describe experiments in which human subjects in the postabsorptive state were kept at rest for six and one-half hours in hot rooms of two different humidities but of the fairly comparable "effective temperatures" of from 92 to 95 F. A standard meal and a standard amount of water were taken at stated times, and observations were made on pulse rate, body temperature, respiratory changes, urinary acid excretion, certain acid-base items in the cutaneous vein blood and symptoms. In subjects exposed to high temperatures, dry or humid, the pulse rate and body temperature behave in a closely similar fashion. In the postabsorptive state they respond in equivalent fashion in environments of equivalent "effective temperatures," whether dry or humid; the taking of food, however, causes a greater reaction in the dry atmosphere. The value of Q_{10} for pulse rate in these experiments shows that the increase in rate is the result of complex factors. Respiratory changes are slight in the first three hours of the exposure; they may become more marked subsequently. These changes are of the nature of increased depth rather than rate of respiration. Alveolar carbon dioxide tension does not fall until the respiratory volume has been markedly increased. Urinary acid excretion is lowered as compared with the normal room during the third to the sixth hour of the experiment. There is a definite fall in the carbon dioxide of cutaneous vein blood from the forearm. This appears before any fall in alveolar carbon dioxide tension. It is suggested that the causation is increased excretion of carbon dioxide through the skin, supplemented in some cases by an increased rate of cutaneous blood flow. Falling alveolar carbon dioxide tension may later cause a further lowering. The evidence for the existence of a true alkalemia of arterial blood, apart from overventilation, is inconclusive. There is no increased blood lactate content under these conditions. In the consideration of acid-base changes there is an urgent need for the reduction or, so far as that is not possible, for the simultaneous study of variables, simultaneous measurement of numerous items and rigid standardization of conditions.

Lancet, London

1: 1427-1482 (June 22) 1935

Undulant Fever in Scotland. C. P. Beattie, J. Smith and W. J. Tulloch.—p. 1427.
Hemoglobin Level Among London Mothers of Hospital Class and Its Probable Bearing on Susceptibility to Infection. Helen M. M. Mackay.—p. 1431.
*Influence of Large Doses of Potassium Chloride on Myasthenia Gravis. L. P. E. Laurent and W. W. Walther.—p. 1434.
Cleft Palate. W. E. M. Wardill.—p. 1435.
Use of Purified Casein in Salt-Free Diets. E. M. Widdowson and R. A. McCance.—p. 1437.
Value of the Drinker Respirator in Diphtheria, Empyema and Pulmonary Collapse: Note. M. Mitman and N. D. Begg.—p. 1438.
Adolescent Coxa Vara. V. H. Ellis.—p. 1440.

Large Doses of Potassium Chloride in Myasthenia Gravis.—Laurent and Walther determined the level of potassium in the blood plasma of ten normal subjects and of six patients presenting myasthenia. They used the following method of potassium estimation: Clear, nonhemolized serum or plasma is deprived of protein by means of tungstic acid and the clear supernatant fluid is treated with nearly saturated sodium cobaltic nitrite solution to precipitate the potassium as potassium sodium cobaltic nitrite. The precipitate is washed with distilled water and a solution of metaphenylenediamine hydrochloride is added and the precipitate allowed to dissolve in this acid solution in the boiling water bath. A yellow color is produced, varying in intensity with the concentration of nitrite. This color is compared with the color produced by a standard potassium solution similarly treated, in a colorimeter. The advantages of the method are speed, simplicity and sensitiveness. An adequate color is produced by quantities as low as 0.2 cc. of plasma, provided a microcolorimeter is used. The ten normal subjects had respectively 21.4, 17.5, 22.5, 15.2, 15.2, 15.9, 15.8, 15.8, 17.0 and 18.0 expressed in milligrams per hundred cubic centimeters, while the six myasthenic patients had 15.7, 16.4 later 13.8, 15.2 later 15.8, 14.2, 15.8 and 15.2. Three patients with myasthenia were given 2 Gm. of potassium chloride orally five times a day, each dose being dissolved in half a glass of water. They all reported some subjective improvement, starting half an hour after each dose and passing off in the course of the next hour. The authors observed slight diminution in ptosis, slight improvement in the range of ocular movement and increases of from 3 to 5 pounds in the power of the grasp. Large single doses were administered to five patients in the hope of obtaining a more clear cut improvement. Ptosis, external ocular movements and facial appearance were improved to a greater extent than the limbs, although the recording dynamometer showed constant increase in the power of the grasp of from 3 to 15 pounds according to the case. In two cases the plasma potassium was determined before and an hour after the ingestion of 12 Gm. of potassium chloride. A considerable rise took place in each case. The preliminary figures were 14.7 and 15.2 mg. per hundred cubic centimeters, and they increased to 22.6 and 27.4 respectively. Six patients with myasthenia took from 4 to 6 Gm. of the salt six times daily. This treatment was a valuable adjunct to prostigmine (a derivative of physostigmine). Several of the patients found that a dose of potassium chloride taken before the action of prostigmine has ended relieves the feeling of exhaustion and to some extent prolongs the improvement brought about by this drug. The results obtained with the largest doses of potassium chloride tolerated by the patients are still somewhat short of the effect of 0.5 mg. of prostigmine given by injection. The authors conclude that potassium chloride, when administered orally in doses of from 10 to 12 Gm., gives a demonstrable improvement in myasthenia and that in small repeated doses it is a useful adjuvant to prostigmine.

Japanese Journal of Gastroenterology, Kyoto

6: 61-112 (Dec.) 1934

Study of Relations Existing Between Liver Function and Metabolism of Fructose: Reports I to VI. Y. Iida.—p. 61.
Experimental Study on Influence of Diet on Formation of Hepatic and Renal Calculi: Report IV. Effect of Diet Deficient in Fat Soluble Vitamins. IV. Anatomic and Histologic Study of Liver, Gallbladder and Kidneys. Appendix: Bacteriologic and Microscopic Investigation of Bile and Urine. K. Usuki.—p. 94.
Id.: Report V. Feeding on Diet Deficient in Fat Soluble Vitamin. V. Changes of Hydrogen Ion Concentration and Buffer Action of Bile. K. Usuki.—p. 105.

Presse Médicale, Paris

43: 977-1000 (June 19) 1935

*Parathyroidectomy and Chronic Rheumatism. L. Bérard, H. Thiers and M. Henry.—p. 977.
Serious Hemorrhages from Solitary Rupture of Hymen. A. Binet and M. Tieger.—p. 980.
Vulnerable Regions of Small Intestines in Closed Traumatisms of Abdomen. C. Vergoz, Homar and Ricard.—p. 981.
Facial Spasms of Dental Origin. J. Bercher, B. Pommé and J. Duguet. —p. 982.
Acute Puerperal Psychotic Encephalitis. L. Marchand, A. Courtois and P. Sivadon.—p. 984.
*Gastro-Esophageal Sensation of Burning. M. Gaston-Durand.—p. 987.
Importance of Mucin in Equilibrium of Gastric Acidity.—R.-H. Monceaux.—p. 988.

Parathyroidectomy and Chronic Rheumatism.—Bérard and his co-workers discuss the question of parathyroidectomy for chronic rheumatism. The clinical indications are uncertain, and failures occur apparently regardless of the type of the rheumatism. They believe that parathyroid extract produces in certain cases modifications of the oscillometric curve. This action of the extract verifies the reality of the close relation between the parathyroid and vegetative systems. The suddenness of the improvement in certain cases and the rapidity of relapses confirms the impression of nervous action. The most effective operation is the ablation of a portion of the parathyroid system, even though this is not the cause of the pathologic syndrome. It is a symptomatologic treatment acting through the intermediary of the vegetative system. The obscure point is the nature of this connection. The simplest hypothesis is that parathyroid extract regulates the relation between sodium × potassium and calcium × magnesium. If this is verified, the improvement of a chronic rheumatism would be the conclusion of a series of phenomena which, starting with a disturbance of ionic equilibrium of the blood by the parathyroid, ends in a modification of vegetative excitability.

Gastro-Esophageal Sensation of Burning.—The group of patients treated by Gaston-Durand comprised those having gastroduodenal burning sensations with migraine, with urticaria, with a combination of the two, and with migraine and angioneurotic edema. Twenty-one patients (fifteen women and six men) were observed. A first series of daily subcutaneous injections of parathyroid extract was given. Five units was employed on the first day to test the susceptibility of the patient and 10 units on the succeeding days. From 15 to 20 units was given in some cases of severe disorder. Twelve injections were given in the series. In the three or four following weeks, bismuth subnitrate, kaolin, magnesium or acacia was administered orally a half hour before meals. A month after the first parathyroid series, a second series is given with subsequent alternation of these procedures. In one case there was complete failure (after two series), in four there was partial failure, in four there was marked improvement and in twelve there was such a notable improvement that the patients could be considered cured. The author states that this method of treatment cannot be applied to all cases and is not infallible but offers more hope in selected cases than any other method that he has tried.

Revue Française de Pédiatrie, Paris

11: 265-408 (No. 3) 1935

Studies on Infantile Acrodynia: Annual and Seasonal Frequency. E. Leenhardt and J. Boucomont.—p. 265.
Id.: Capillaroscopic Investigations. J. Boucomont and R. Lafon. —p. 272.
*Investigations on Origin of Allergy of Nursling. P. Woringer.—p. 283.
Prophylaxis and Treatment of Severe Familial Icterus of the New-Born. M. Péhu, A. Brochier and P. Wang.—p. 304.
*Sugar of Blood and Cerebrospinal Fluid. A. V. Tcherkassov and E. E. Jolkver.—p. 350.
Anemia of Mother and Child. S. Van Creveld and N. I. Heybroek. —p. 365.

Origin of Infantile Allergy.—Woringer studied sixty-six allergic infants from the standpoint of allergic family history and particularly of other cases of allergy in the direct ancestors. For twenty-two (33⅓ per cent) the inquiry was negative. Forty-four infants had one or more cases of early eczema among their direct ancestors or in the preceding collateral generations. Twenty-three times (35 per cent) the family of the mother was affected, seventeen times (26 per cent) that of the father and four times both sides. The allergies of the same family were always identical from an etiologic standpoint. The children of the same parents were affected with allergic disorders in a variable proportion, but usually the unaffected members predominated. The author believes that these facts cannot be explained either on the hypothesis of a postnatal sensitization or by an intra-uterine sensitization. They favor the hereditary origin of infantile allergy. This type appears as a character transmitted by gametes according to mendelian laws and seems to be recessive.

Blood and Cerebrospinal Fluid Sugar.—Tcherkassov and Jolkver studied seventy-four patients with different forms of meningitis. They made 149 parallel determinations of the blood sugar and of the cerebrospinal sugar in these patients. They conclude that the quantity of fasting blood sugar in mild cerebrospinal meningitis does not show any pronounced deviations from normal. In the severe forms an increase paralleling the severity of the process is present. In tuberculous meningitis it is more often above normal. The quantity of sugar in the cerebrospinal fluid during meningitis varies according to the etiology. In tuberculous meningitis it is markedly diminished and falls progressively with the development of the disease. In cerebrospinal meningitis it varies with the course of the disease: at the beginning it is always below normal and later the quantity increases as the process improves; in serous meningitis the quantity of the spinal fluid sugar diminishes a little at the onset, but less pronouncedly than in cerebrospinal or tuberculous processes. The proportion of blood sugar and cerebrospinal sugar in the course of tuberculous and cerebrospinal meningitis shows a higher value than normal, owing to the diminution of sugar in the fluid. In serous meningitis the proportion is reversed, owing to the increase of sugar in the cerebrospinal fluid. The glycemic curve in the toxic forms of cerebrospinal meningitis and in advanced cases of tuberculous meningitis does not return to the initial level even after two hours and sometimes does not reach its maximum until this period. The attempt to push sugar on the patients with meningitis aims at the definition of the functional state of the blood-brain barrier but is in no way preferable to other methods employed for this object.

Policlinico, Rome

42: 389-448 (July 1) 1935. Medical Section

Extrapyramidal Nervous Syndrome of Malarial Origin: Case. V. Chini. —p. 389.
*Spontaneous and Provoked Ketonemia as Functional Test of Liver. P. Zorzoli.—p. 405.
*Resistance of Leukocytes in Acute Diseases of Respiratory Tract of Children. V. Serra and S. Colbi.—p. 425.
Creatinemia in Muscular Hypertonia of Extrapyramidal and Pyramidal Origin. G. Cardinale and G. Arnone.—p. 441.

Ketonemia as Functional Test of Liver.—Zorzoli studied the behavior of ketonemia after the intramuscular injection of epinephrine alone and in combination with sodium butyrate by the oral route in normal persons and in three groups of patients suffering from liver diseases, diabetes and hyperthyroidism, respectively. For the estimation of the results of the tests the patients suffering from liver diseases are placed in two groups according to the value of spontaneous ketonemia during fasting, which is higher than normal in those having the febrile and acute type of the disease and jaundice, and lower than normal in those suffering from the chronic type, especially in patients who are in the advanced stages of atrophic cirrhosis. As a result of the tests, ketonemia increases both in normal persons and in patients of the first group having liver diseases, but the increase of ketonemia in the latter is higher than that in the former. The curves of ketonemia in patients of this group are similar to those given after the same tests by patients suffering from either diabetes or hyperthyroidism. Ketonemia in patients of the second group fails to react to the tests or reacts poorly. The more advanced the disease is in this group, especially in those suffering from atrophic cirrhosis, the greater the insufficiency of the liver and the more marked the lack of response of ketonemia to the tests.

Resistance of Leukocytes in Respiratory Diseases in Children.—Serra and Colbi state that the fragility of the leukocytes increases during the evolution of acute diseases of the respiratory tract of children. The intensity of the fragility

does not have any relation to the age of the patient or to the duration of the disease. The leukocytes start regaining their resistance one or two days after the febrile crisis if there are no recurrences or complications. While the fragility of the leukocytes has no prognostic value, its persistence after the crisis has. A decreased resistance of the leukocytes in one case represents a defensive reaction of the organism against the infection similar to the appearance of fever and leukocytosis in some infections, while in another it indicates the presence of new pathologic foci or the development of some other infectious disease as a complication and coexists with the persistence or reappearance of fever. The fragility of the leukocytes appears to be the result of an injurious action of the bacteria and their toxins, both directly on the leukocytes in the blood and indirectly by a pathologic stimulation of the bone marrow. The predominance of lymphocytes over leukocytes during the reversion of the leukocytic formula that follows the febrile crisis is probably the factor by which the resistance of the leukocytes increases after the crisis.

Semana Médica, Buenos Aires

42: 1841-1912 (June 27) 1935. Partial Index

Pulsating Exophthalmos: Case. A. F. Saralegui.—p. 1841.
Erythema Nodosum in Children. J. C. Navarro and R. R. Sundblad. —p. 1847.
Salmonella Infection in Man. E. Savino.—p. 1860.
Fibromas of Abdominal Wall: Cases. C. A. Brea.—p. 1866.
Subcutaneous Rupture of Achilles Tendon: Case. E. F. Malbec and B. S. Aguiló.—p. 1869.
*Speed of Sedimentation of Erythrocytes in Pick's Disease. H. Basabe. —p. 1890.

Sedimentation Rate in Pick's Disease. — Basabe states that retarded sedimentation speed of the erythrocytes in patients with the clinical picture of Pick's (Friedel) disease is of value in the diagnosis. The fact that the velocity is increased in tuberculosis and in rheumatism indicates that the etiology of Pick's disease is neither tuberculous nor rheumatic. The abdominal symptoms in patients suffering from Pick's disease, especially the obstinately recurring ascites, mask the clinical picture and suggest a mistaken diagnosis of tuberculous peritonitis. The systematic performance of the Rivalta reaction of the ascitic fluid for determination of its nature, either exudative or transudative, as well as of the other laboratory tests commonly used for detection of tubercle bacilli, is advisable in all cases of tuberculous peritonitis for the differential diagnosis between this condition and Pick's disease. In the latter, the retarded sedimentation speed coincides with negative results of the Rivalta reaction and of the other tests for tubercle bacilli and with a lesion of the pericardium, detectable in careful examination of the heart. On the other hand, acceleration of the sedimentation of the erythrocytes and positive results of the Rivalta reaction or of the other reactions for tubercle bacilli in a diagnosis of Pick's disease indicate that the diagnosis should be verified. A case of Pick's disease is reported.

Archiv für Gynäkologie, Berlin

159: 313-428 (June 14) 1935. Partial Index

*Enlargement of Pelvis by Means of Hormones in Animal Experiments. S. Tapfer and L. Haslhofer.—p. 313.
*Significance of Determination of Urinary Pigments for Obstetrics and Gynecology. E. W. Winter.—p. 332.
Changes in Mucous Membrane of Uterine Cervix During Pregnancy, Delivery and Puerperium. E. Petrowa and A. Berkowskaja.—p. 339.
Epinephrine and Sugar Contents of Fetal Blood. O. Macchiarulo.—p. 349.
*Pathogenesis of Galactorrhea and Remarks on Hormone Processes in Physiologic Lactation. E. J. Kraus.—p. 380.
Diabetes Insipidus and Pregnancy. H. Dietel.—p. 404.

Enlargement of Pelvis by Means of Hormones.—Tapfer and Haslhofer call attention to the fact that a considerable expansion of the pubic symphysis and of the sacro-iliac joints takes place during pregnancy and delivery. They review the literature on the causes of this pelvic enlargement, citing animal experiments carried out by several investigators. They show that nearly all workers agree that the pelvic enlargement in pregnant guinea-pigs is due to the action of certain hormones. However, there is no agreement as to what hormone produces this pelvic enlargement, whether the estrogenic or the corpus luteum hormone, and to determine this the authors made experiments on guinea-pigs. They used the serum of pregnant rabbits to obtain enlargement of the pelvis without artificial hormone and organ preparations. It was found that this serum produces in nonpregnant guinea-pigs an expansion of the pubic symphysis like that taking place during pregnancy and was the more effective for enlargement of the pelvis, the closer the pregnancy was to its termination. The authors demonstrate that the behavior of the pubic symphysis of guinea-pigs toward the serum of pregnant rabbits indicates clearly that the enlargement of the symphysis and the action of the corpus luteum do not run parallel. Experiments on castrated animals indicated that the estrogenic hormone is the active substance in the pregnancy serum. Subsequently the author tested also artificial hormone preparations and found that estrogenic substance alone is capable of producing an enlargement of the pubic symphysis. Microscopic studies disclosed that the expansion of the pubic symphysis produced artificially by estrogenic substance is identical with that of pregnancy.

Determination of Urinary Pigments. — In colorimetric studies on specimens of the urine of 465 women from gynecologic and obstetric departments, Winter employed absolute colorimetry by means of gray solution and spectral filters. He reviews observations made by others by means of the step photometer. The elimination of urinary pigment has been known to be increased following irradiations with roentgen or radium rays. This increase has been ascribed to an impairment of the liver or to a greater decomposition of erythrocytes, the latter possibility being considered most likely. Another investigator detected increased pigment content of the urine during pregnancy and ascribed it to a greater blood exchange during pregnancy. The author observed that in some cases of carcinoma, nephropathy and eclampsia the color values were on the upper limits of normality or slightly above these limits. He never observed great deviations from the normal and consequently does not draw conclusions regarding the function or abnormal function of an organ (perhaps the liver) or of a system, such as the erythropoietic or the reticulo-endothelial system. The colorimetric studies on the urine are of theoretical interest and doubtless are an aid to further research but have as yet no practical clinical value for the gynecologist.

Pathogenesis of Galactorrhea. — Kraus says that the majority of cases of galactorrhea occur in women (rarely in men) with disturbances in the hypophyseodiencephalic system, particularly in patients with acromegaly. He describes two cases of galactorrhea in nulliparas in whom there existed a partial hyperpituitarism caused by hyperplasia of the anterior lobe of the hypophysis with an increase in the eosinophil cells and with proliferation of hypertrophic main cells, some of them resembling pregnancy cells. The ovaries showed signs of degeneration. The author sees the cause of the galactorrhea in these hypophyseal and ovarian changes. The fact that the continued stimulus of suckling is capable of producing lactation even in virginal animals and that lactation may develop during false pregnancy indicates that the incretory organs, particularly the hypophysis, are stimulated by way of nervous channels. Under pathologic conditions lactation may develop under the influence of a partial, lactogenic hyperpituitarism in which deficient or abolished gonadal function is a contributing factor.

Deutsche medizinische Wochenschrift, Leipzig

61: 1065-1104 (July 5) 1935. Partial Index

*Clinical Aspects and Therapy of Severe Dysentery During Childhood. A. Loeschke.—p. 1065.
Roentgenologic Demonstration of Cranial Foramen Ovale and Its Significance for Treatment of Trigeminal Neuralgia. F. F. Härtel. —p. 1069.
*Further Studies on Formerly Unknown Decomposition Product of Blood Pigment (Pentdyopent) in Urine. F. Wimplinger.—p. 1072.

Dysentery During Childhood. — Loeschke shows that in severe toxic dysentery two conditions predominate, the loss of water and of body fluids and the flooding of the organism with toxins. He says that, although the efficacy of therapeutic serum is doubtful, it should be injected. If considerable dehydration has taken place or if it threatens and with it the danger of secondary intoxication, infusion should be resorted to, preferably in the form of the continuous drip. If the toxic symp-

toms persist for longer periods, the transfusion of small quantities of blood (from 100 to 200 cc.) is advisable. If there are signs of increasing cerebral edema, concentrated dextrose solutions should be tried intravenously.

The Pentdyopent Test.—Wimplinger calls attention to a decomposition product of the blood pigment recently discovered by Bingold and called pentdyopent, a name that designates the spectroscopic localization of the substance. In the Schumm-Loewe grating spectroscope it is indicated by a sharply defined line that has its maximum at 525 (pentdyopent) micromicrons. The substance is free from iron and protein and readily soluble in water. In alkaline solution (in case of the addition of potassium hydroxide or ammonia and of reduction with the aid of sodium thiosulphate) the substance has a pleasing red color. Spectroscopic analysis is possible only following these preparatory measures, for the nonreduced substance in the nonalkaline reaction does not permit this. If present in the urine, the substance is readily detectable. To 10 cc. of urine, approximately 2 cc. of solution of potassium hydroxide is added and the mixture is boiled. Following filtration, this urine is reduced by means of small quantities of sodium thiosulphate and is boiled again. Spectroscopic examination discloses at about 535 micromicrons a sharply defined line, which has its maximum at 525 micromicrons. Urobilinogen and urobilin can likewise be detected in the spectroscope. The author searched for pentdyopent in 1,200 specimens of urine. He found that it is always detectable when conditions exist that cause the elimination of bile pigments. The first group of specimens in which pentdyopent was found came from patients with icterus. In certain infectious diseases, such as pneumonia, Weil's disease, typhoid and various types of sepsis, pentdyopent was present, as was the case also in a number of cardiac disturbances in which conditions of stasis existed. Pentdyopent was found in cases of hepatic disturbances, but not to the extent to which it had been expected. It had been assumed that in certain diseases of the blood, particularly pernicious anemia, pentdyopent would appear in the urine in large quantities, but this was not the case; in fact, the substance was entirely absent. The same applies also to cases of lymphogranulomatosis and leukemia. Uncomplicated renal diseases and acute and chronic gastro-intestinal disturbances gave negative results. The author points out that numerous tests on the blood serum of patients who eliminated large quantities of pentdyopent in the urine were nearly all negative. Bingold himself has found traces of the substance in the erythrocytes and has demonstrated by test tube experiments on hemoglobin that the substance is actually a derivative of the blood pigment. The pentdyopent test has diagnostic significance, the negative outcome even more than the positive one. For instance, if the question arises as to whether a hepatic disorder is present or another organ is involved, the absence of pentdyopent from the urine permits the exclusion of a hepatic disorder.

Deutsche Zeitschrift für Chirurgie, Berlin

245: 173-260 (June 28) 1935

*Significance of Presacral Intervertebral Disk for Spondylolisthesis. H. Meyer-Burgdorff and H. Sandmann.—p. 173.
*Localization of Surgical Disturbance in Central Nervous System by Means of Chronaxia. I. Nagai.—p. 184.
Influence of Circulatory Disturbances on Electrical Behavior of Skin. G. Witte.—p. 193.
Results of Treatment of So-Called Congenital Dislocation of Hip Joint. Gaugele and L. Kienzle.—p. 214.
Surgical Treatment of Nonspecific Lesions in Knee Joint. W. Hetzar. —p. 231.
Clinical Aspects and Pathology of Cerebral Tumors. T. Reeke.—p. 245.
Significance of Number of Cells in Inoculation of Adenocarcinoma of Mouse. G. Witte—p. 251.

Spondylolisthesis.—Meyer-Burgdorff and Sandmann, in discussing the pathogenesis of spondylolisthesis, point out that as yet there is no definite proof of the congenital nature of the disorder. They show that, whereas some investigators stress the importance of "congenital spondylolysis," that is, the cleft in the lateral portion of the vertebral arch, others, particularly Blume, stress the destruction of the intervertebral disk between the fifth lumbar and the first sacral vertebra as the most important factor. The authors criticize the specimen on which Blume made his studies and on the basis of which he stressed the degeneration of the intervertebral disk as the important factor in the development of spondylolisthesis. They show that in this specimen there existed severe malformations in the form of a congenital kyphosis with misplacement of the bones, fusions, arch defects and so on. They maintain that Blume's specimen does not represent a spondylolisthetic disorder. They state that the question investigated by Blume, whether the primary cause of the slipping is to be found in the intervertebral disk, has been the subject of their investigations for two years. On the basis of clinical and roentgenologic observations and of animal experiments they conclude that a degeneration of the presacral intervertebral disk occurs quite frequently in older persons without subsequent slipping, but that lateral vertebral clefts develop with the same frequency without the least indication of a degeneration of the intervertebral disk. The authors tested the resistance of the presacral intervertebral disk on dogs. Among nine dogs there was one in which "sliding" of the lumbar vertebra on the sacrum could be produced after seven months of observation. By taking out lateral and posterior portions of the arch, it was possible to make the intervertebral disk between the last lumbar and the first sacral vertebra yield and produce a slipping of the vertebrae. The result of this experiment largely resembles spondylolisthesis in human subjects. The authors conclude from this that the degeneration of the intervertebral disk cannot be the cause of spondylolisthesis but that the presence of a lateral cleft in the arch, that is, spondylolysis, is the cause. However, they were not able to prove the congenital nature of spondylolysis.

Localization of Surgical Disturbances in Central Nervous System.—Nagai reports that, in thirty patients with spinal disorders and signs of pressure myelitis, he was able to determine by means of chronaxia measurements changes caused by the disease focus. In all the patients he observed in the region corresponding to the focus either a prolongation or a shortening of the chronaxia. He generally observed a shortening in the new cases and a prolongation in the old cases. The chronaxia likewise disclosed fluctuations in the muscles belonging to the segments below the segment involved by the focus, but they were of a milder degree than the ones in the region of the focus. The author concluded that the change in the chronaxia in the region corresponding to the focus is helpful in localizing the focus. He made use of the chronaxia test also in twenty cerebral processes. He points out that the motor centers are localized chiefly in the gyrus centralis anterior. He thinks that a change in any of the centers would be followed by a change in the chronaxia of the subordinated nerves and muscles. He actually found considerable conformity between the results of the chronaxia tests and observations during the surgical intervention. He reaches the conclusion that the chronaxia test is superior to the formerly employed physical methods, because it avoids unpleasant aftereffects and is simpler.

Klinische Wochenschrift, Berlin

14: 945-984 (July 6) 1935. Partial Index

Mechanism of Tuberculosis Immunity. H. Selter and P. Weiland. —p. 948.
*Cushing's Basophil Adenoma of Hypophysis (with Functional Tests). K. H. Hildebrand.—p. 951.
*Pectins as Substances Accelerating Blood Coagulation. O. Riesser. —p. 958.
*New Method of Rapid Histologic Diagnosis in Its Significance for Surgery of Brain. M. de Crinis.—p. 961.
Temperature Regulation. H. H. Meyer.—p. 962.
Group Formation of Diphtheria Bacilli. J. Hammerschmidt.—p. 964.

Cushing's Syndrome.—Hildebrand points out that Cushing has separated from the group of so-called polyglandular disturbances a definite syndrome and has shown that a basophil adenoma of the hypophysis is the cause of this condition. While acromegaly is the result of a hyperfunctioning of the eosinophil cells, this new syndrome is the result of a hyperfunctioning of the basophil epithelia. Pituitary basophilism has been described by others under such terms as multiglandular disease, osteoporotic obesity, hypophyseal plethora and diabetes of bearded women. Because it cannot be decided as yet to what extent other glands are involved in addition to the hypophysis, the author thinks that each new case of Cushing's syndrome should

be carefully studied. He gives the history of a man, aged 53, who had an abnormal carbohydrate metabolism with signs of insular diabetes; an obesity that was localized on the head, neck and trunk and in which there was a tendency to hypercholesteremia; no demonstrable disturbance in the protein metabolism; a severe decalcification of the bones with hyperphosphatemia, slight hypercalcemia, negative calcium balance and a slightly positive phosphorus balance; follicle maturation principle in the urine, but no gonadotropic principle in the cerebrospinal fluid; reduced basal metabolic rate with unusually strong specific dynamic action; intact renal function, and increase in the systolic and diastolic blood pressures but no increase in the quantity of blood. On some portions of the patient's body the skin was extremely thin, so that the subpapillary venous plexus was quite noticeable, and to this was ascribed the sensitivity for mechanical injuries. There was sexual dystrophy. The patient's previous history disclosed a temporary polyuria and polydipsia. The author thinks that these symptoms make the existence of a basophil adenoma highly probable.

Pectins Accelerate Blood Coagulation.—Favorable clinical reports on the hemostyptic action of pectin induced Riesser to investigate the action of pectin on the coagulation of blood. He experimented on rabbits, using a sterile, isotonic apple pectin. The preparation was administered to the animals intramuscularly, orally or intravenously. All these methods of application resulted in a considerable acceleration of the coagulation time, occasionally reaching such a degree that it was impossible to get noncoagulated blood into the tube. The animals showed no other manifestations. In discussing the mode of action of pectin, the author points out that in vitro pectin has a tendency to retard rather than promote coagulation. From this he concludes that the action of pectin is an indirect one and that the active substance is formed as the pectin comes into contact with the endothelium of the vessels.

Rapid Histologic Diagnosis in Surgery of Brain.—To find a rapid method for histologic examination, de Crinis used a micropolychromatic device that permits the optic coloration of microscopic objects. The micropolychromatic instrument is a shutter mechanism attached to the illuminating apparatus of the microscope and permits the simultaneous use of the light and dark fields with and without optic coloration. The author describes its structure, showing that it is a dioptric dark field condenser. The examination of the tissue is done in the following manner: A quantity of the tissue or the punctate equal to half the size of a pinhead is put on a slide and prepared by means of teasing needles in physiologic solution of sodium chloride or a 1 or 2 per cent bichromate solution. A cover glass is pressed over it and it is examined under the microscope with the polychromatic attachment. It is unnecessary to prepare a completely teased specimen, because the diagnosis is easier if cells can be observed both inside and outside the tissues. Not all color combinations are of equal value for the examination. He found the contrast violet and green most suitable, the first for the colored dark-field illumination and the second for the background. He shows that the method is suitable also for the demonstration of cells in the cerebrospinal fluid. He concludes that the histologic examination of the tissues with the aid of the micropolychromatic device, because of its simplicity and rapidity, is a valuable aid in cerebral surgery.

Medizinische Klinik, Berlin

31: 869-900 (July 5) 1935. Partial Index

Pathophysiology of Concussion of Brain. A. Kral.—p. 876.
*Spontaneous Thrombosis of Inferior Hemorrhoidal Plexus. K. Blond.—p. 880.
Severe Anemia Induced by Self Injury. G. Purper.—p. 883.
Physical Diagnosis of Lungs. F. Besdziek.—p. 884.

Thrombosis of Inferior Hemorrhoidal Plexus.—Blond states that thrombosis in the region of the inferior hemorrhoidal plexus is the most frequent spontaneous thrombosis in the human organism. These nodules are extremely painful. If they are incised within the first eight days after their development, a dark red discharge can be pressed out. If more than eight days has elapsed, the nodule can be excised only by removing the venous wall. Not until the proctoscope with the lateral window was available could these cases be subjected to an exact examination. The author injects an anesthetic underneath the nodule, opens it by means of a puncture incision and evacuates the thrombus by means of lateral pressure. The subsequent proctoscopy, which is usually painless, reveals varices in the region of the superior hemorrhoidal plexus which should be obliterated at once. Their obliteration, however, differs from that of varices of the lower extremities. He makes submucous injections without aiming at or achieving thrombosis. In answer to the question why spontaneous thromboses develop in this region, he points out that this is the "divide" between the portal system and the vena cava and that the reflux of portal blood into the vena cava is one of the chief factors in spontaneous thrombosis. Since the presence of varices within the rectum is a grave danger during pelvic operation, he advises that every surgical intervention within the pelvis be preceded by an examination of the extremities and by proctoscopy to determine the condition of the rectal veins. Varicose conditions in these regions signify danger of embolism and should be properly treated first.

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Modern Antipyresis. E. Grafe.—p. 1063.
Myotonia, Myotonic Dystrophy and Pupillotony. W. Kyrieleis.—p. 1067.
*Abdominal Myalgia and Its Relations to Internal Organs. F. Klingler.—p. 1069.
Abdominal Injury Caused by Bullet Complicated by Meckel's Diverticulum. P. Strater.—p. 1071.
Therapeutic Use of Yeast (Vitamin B): Manifestations of Vitamin B Deficiency. F. Widenbauer.—p. 1071.
*Noteworthy Source of Error in Staining for Demonstration of Schüffner's Stippling. Giemsa.—p. 1075.

Abdominal Myalgia.—According to Klingler, abdominal myalgia is a form of muscular rheumatism. It is comparatively rare but of great differential diagnostic significance. The author observed cases of abdominal myalgia erroneously diagnosed as colitis, enteritis, colic, gastralgia, gastric ulcer, renal, ureteral or biliary calculi, cardiospasm, angina pectoris and so on. He reports several cases. Myalgia may resemble neuralgia, but careful observation will reveal its myalgic character, for the pain follows the muscle and not the nerve. If the myalgia is localized in the lower part of the abdomen, intestinal colics and defecation are the predominating symptoms, but, if the upper part of the abdomen is involved, vomiting and cardiospasm are often observed. Pectoral myalgia is accompanied by cardiac symptoms. To counteract the disorders, it is necessary to treat the primary myalgia. The author did this successfully by the application of heat and massage and by the injection of a 10 per cent solution of dextrose.

Source of Error in Staining for Schüffner's Stippling.—Giemsa points out that, if slides of blood from tertian malaria are stained with Romanowsky's method, the erythrocytes that have been attacked by the parasites show a peculiar red stippling, which increases with the age of the plasmodia and to which Schüffner, their discoverer, ascribed great diagnostic value in the recognition of this type of malaria. Romanowsky's method was not quite perfect until it had been recognized that the staining of these granules was possible only when the stain had a weakly alkaline reaction. Giemsa had obtained perfect results for years, but suddenly he noticed failures. Since the same kind of dye was being used, the cause could not lie in the dye solution. He soon discovered the cause in the fixing agent, for, whereas formerly he had always used the purest methyl alcohol, he had been using a cheaper, somewhat less pure, type of alcohol when the mistakes were first noticed. Comparative tests with the two types of methyl alcohol soon disclosed that the degree of purity of the methyl alcohol is of great importance for the demonstration of Schüffner's stippling. What types or impurities caused the mistakes could not be determined as yet. The author recommends the use of buffered water. He dilutes his stain solution with a buffer solution with a p_H of 7.2. He states that other types of granules, such as the Ziemann stippling in quartan malaria and Maurer's spots in tropical malaria, as a rule become visible only in case of a slightly higher p_H (7.5). Whether impure methyl alcohol impairs the staining of these types of granules also, the author had no opportunity to observe.